IFS WMC303-1W-1T-1200
Dual Band Wireless Access Point
User Manual

P/N 1073050 • REV A • ISS 15OCT15

Copyright © 2015 United Technologies Corporation
Interlogix is part of UTC Building & Industrial Systems, Inc. a unit of United Technologies Corporation. All rights reserved.

Trademarks and patents The WMC303-1W-1T-1200 name and logo are trademarks of United Technologies.

Other trade names used in this document may be trademarks or registered trademarks of the manufacturers or vendors of the respective products.

Manufacturer Interlogix (UTC Fire and Security)
3211 Progress Drive, Lincolnton, NC 28092 USA

Authorized EU manufacturing representative:
UTC Climate Controls & Security B.V.,
Kelvinstraat 7, 6003 DH Weert, Netherlands

Intended use Use this product only for the purpose it was designed for; refer to the data sheet and user documentation for details. For the latest product information, contact your local supplier or visit us online at www.interlogix.com.

Certification CE N4131

ACMA compliance **Notice!** This is a Class B product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

European Union directives **2004/108/EC (EMC Directive):** Hereby, UTC Building & Industrial Systems, Inc. declares that this device is in compliance with the essential requirements and other relevant provisions of Directive 2004/108/EC.

Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his/her own expense. Any changes or modifications not expressly approved by UTC could void the user's authority to operate this equipment under the rules and regulations of the FCC.

FCC Caution:

To assure continued compliance, (for example, use only shielded interface cables when connecting to computer or peripheral devices) any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference
(2) This device must accept any interference received, including interference that may cause undesired operation.

Federal Communication Commission (FCC) Radiation Exposure Statement

This equipment complies with FCC radiation exposure set forth for an uncontrolled environment. In order to avoid the possibility of exceeding the FCC radio frequency exposure limits, human proximity to the antenna shall not be less than 20 cm (8 inches) during normal operation.

CAUTION: Changes or modifications not expressly approved by UTC for compliance could void the user's authority to operate the equipment.

CE Mark Warning

This is a Class B product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

Energy Saving Note of the Device

This power required device does not support Standby mode operation. For energy saving, please remove the DC-plug to disconnect the device from the power circuit. Without removing the DC-plug, the device still consumes power from the power circuit. In view of Saving the Energy, it is strongly suggested to remove the DC-plug for the device if this device is not intended to be active.

Canadian Compliance

This Class B digital apparatus meets all requirements of the Canadian Interference Causing Equipment Regulations. Cet appareil numérique de la classe B respects toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Canada - Industry Canada (IC)

The wireless radio of this device complies with RSS 247 and RSS 102 of Industry Canada.
This Class B digital device complies with Canadian ICES-003 (NMB-003).
Cet appareil numérique de la classe B respects toutes les exigences du Règlement sur le matériel brouilleur du Canada.

This device complies with Industry Canada's licence-exempt RSSs. Operation is subject to the following two conditions:
(1) This device may not cause interference; and
(2) This device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :
(1) l'appareil ne doit pas produire de brouillage, et
(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

WMC303-1W-1T-1200 complies with IC requirements, IC: 20201-WMC3031200.

This radio transmitter (IC: 20201-WMC3031200) has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

- Dual Built-in the PCBA (2 x 2.4GHz 2.5dBi PCBA antenna)
- Dual Built-in the PCBA (2 x 5GHz 4dBi PCBA antenna)

Le présent émetteur radio (IC: 20201-WMC3031200) a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal et l'impédance requise pour chaque type d'antenne. Les types d'antenne non inclus dans cette liste, ou dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.

- **Intégré 2.5dBi antenne double polarisation X 2**
- **Intégré 4dBi antenne double polarisation X 2**

LE-LAN devices shall contain instructions related to the restrictions mentioned in the above sections, namely that:

1. the device for operation in the band 5150–5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems;
2. for devices with detachable antenna(s), the maximum antenna gain permitted for devices in the bands 5250-5350 MHz and 5470-5725 MHz shall be such that the equipment still complies with the e.i.r.p. limit;
3. for devices with detachable antenna(s), the maximum antenna gain permitted for devices in the band 5725-5850 MHz shall be such that the equipment still complies with the e.i.r.p. limits specified for point-to-point and non-point-to-point operation as appropriate; and
4. the worst-case tilt angle(s) necessary to remain compliant with the e.i.r.p. elevation mask requirement set forth in Section 6.2.2(3) of RSS-247 shall be clearly indicated.

The maximum conducted output power shall not exceed 250 mW or 11 + 10 $\log_{10}$B, dBm, whichever is less. The power spectral density shall not exceed 11 dBm in any 1.0 MHz band.

The maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 $\log_{10}$B, dBm, whichever is less. B is the 99% emission bandwidth in megahertz. Note that devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

2) Unwanted emission limits

i) For devices with both operating frequencies and channel bandwidths contained within the band 5250-5350 MHz, the device shall comply with the following:

a. All emissions outside the band 5250-5350 MHz shall not exceed -27 dBm/MHz e.i.r.p. if the equipment is intended for outdoor use; or

b. All emissions outside the band 5150-5350 MHz shall not exceed -27 dBm/MHz e.i.r.p. and any emissions within the band 5150-5250 MHz shall meet the power spectral density limits of Section 6.2.1 of RSS-247. The device shall be labelled “for indoor use only.”

ii) For devices with operating frequencies in the band 5250-5350 MHz but having a channel bandwidth that overlaps the band 5150-5250 MHz, the devices’ unwanted emission shall not exceed -27 dBm/MHz e.i.r.p. outside the band 5150-5350 MHz and its power shall comply with the spectral power density for operation within the band 5150-5250 MHz. The device shall be labelled “for indoor use only.”

3) Additional requirements

In addition to the above requirements, devices operating in the band 5250-5350 MHz with a maximum e.i.r.p. greater than 200 mW shall comply with the following e.i.r.p. at different elevations, where θ is the angle above the local horizontal plane (of the Earth) as shown below:

1. -13 dBW/MHz for $0° \leq \theta < 8°$
2. $-13 - 0.716 (\theta-8)$ dBW/MHz for $8° \leq \theta < 40°$
3. $-35.9 - 1.22 (\theta-40)$ dBW/MHz for $40° \leq \theta \leq 45°$
4. -42 dBW/MHz for $\theta > 45°$

The measurement procedure defined in Annex A of RSS-247 shall be used to verify the compliance to the e.i.r.p. at different elevations.

Users should also be advised that high-power radars are allocated as primary users (i.e. priority users) of the bands 5250-5350 MHz and 5650-5850 MHz and that these radars could cause interference and/or damage to LE-LAN devices.

Digital Transmission Systems (DTSs)

DTSs include systems that employ digital modulation techniques resulting in spectral characteristics similar to direct sequence systems. The following applies to the bands 902-928 MHz and 2400-2483.5 MHz.

(1) The minimum 6 dB bandwidth shall be 500 kHz.

(2) The transmitter power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of Section 5.4(4), (i.e. the power spectral density shall be determined using the same method as is used to determine the conducted output power).

For DTSs employing digital modulation techniques operating in the bands 902-928 MHz and 2400-2483.5 MHz, the maximum peak conducted output power shall not exceed 1W. Except as provided in Section 5.4(5), the e.i.r.p. shall not exceed 4 W.

As an alternative to a peak power measurement, compliance can be based on a measurement of the maximum conducted output power. The maximum conducted output power is the total transmit power delivered to all antennas and antenna elements, averaged across all symbols in the signalling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or transmitting at a reduced power level. If multiple modes of operation are

implemented, the maximum conducted output power is the highest total transmit power occurring in any mode.

(5) Fixed point-to-point systems in the bands 2400-2483.5 MHz and 5725-5850 MHz are permitted to have an e.i.r.p. higher than 4 W provided that the higher e.i.r.p. is achieved by employing higher gain directional antennas and not higher transmitter output powers. Point-to-multipoint systems,2 omnidirectional applications and multiple co-located transmitters transmitting the same information are prohibited from exceeding an e.i.r.p. of 4 W.

(6) Transmitters may operate in the band 2400-2483.5 MHz, employing antenna systems that emit multiple directional beams simultaneously or sequentially, for the purpose of directing signals to individual receivers or to groups of receivers, provided that the emissions comply with the following:

(i) Different information must be transmitted to each receiver.

(ii) If the transmitter employs an antenna system that emits multiple directional beams, but does not emit multiple directional beams simultaneously, the total output power conducted to the array or arrays that comprise the device (i.e. the sum of the power supplied to all antennas, antenna elements, staves, etc., and summed across all carriers or frequency channels) shall not exceed the applicable output power limit specified in sections 5.4(2) and 5.4(4). However, the total conducted output power shall be reduced by 1 dB below the specified limits for each 3 dB that the directional gain of the antenna/antenna array exceeds 6 dBi. The directional antenna gain shall be computed as the sum of 10 log (number of array elements or staves) plus the directional gain of the element or stave having the highest gain.

(iii) If a transmitter employs an antenna that operates simultaneously on multiple directional beams using the same or different frequency channels, the power supplied to each emission beam is subject to the applicable power limit specified in sections 5.4(2) and 5.4(4). If transmitted beams overlap, the power shall be reduced to ensure that their aggregate power does not exceed the applicable limit specified in sections 5.4(2) and 5.4(4). In addition, the aggregate power transmitted simultaneously on all beams shall not exceed the applicable limit specified in sections 5.4(2) and 5.4(4) by more than 8 dB.

(iv) Transmitters that transmit a single directional beam shall operate under the provisions of sections 5.4(2), 5.4(4) and 5.4(5).

5.5 Unwanted Emissions

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under Section 5.4(4), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

No part of this publication may be reproduced in any form or by any means or used to make any derivative work (such as translation, transformation or adaptation) without written permission from UTC

Fire and Security.

UTC, reserves the right to revise this publication and to make changes in content from time to time without obligation on the part of UTC to provide notification of such revision or change. UTC provides this guide without warranty of any kind, implied or expressed, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. UTC may make improvements or changes in the product(s) described in this manual at any time.

CAUTION: TO ENSURE REGULATORY COMPLIANCE, USE ONLY THE PROVIDED POWER AND INTERFACE CABLES.

CAUTION: DO NOT OPEN THE UNIT. DO NOT PERFORM ANY SERVICING OTHER THAN THAT CONTAINED IN THE INSTALLATION AND TROUBLESHOOTING INSTRUCTIONS. REFER ALL SERVICING TO QUALIFIED SERVICE PERSONNEL.

R&TTE Compliance Statement

This equipment complies with all the requirements of DIRECTIVE 1999/5/CE OF THE EUROPEAN PARLIAMENT AND THE COUNCIL OF 9 March 1999 on radio equipment and telecommunication terminal Equipment and the mutual recognition of their conformity (R&TTE). The R&TTE Directive repeals and replaces in the directive 98/13/EEC (Telecommunications Terminal Equipment and Satellite Earth Station Equipment) as of April 8, 2000.

Safety

This equipment is designed with the utmost care for the safety of those who install and use it. However, special attention must be paid to the dangers of electric shock and static electricity when working with electrical equipment. All guidelines of this and of the computer manufacture must therefore be allowed at all times to ensure the safe use of the equipment.

Wireless LAN and your Health

The WMC303-1W-1T-1200 like other radio devices, emits radio frequency electromagnetic energy, but operates within the guidelines found in radio frequency safety standards and recommendations.

Restrictions on Use of Wireless Devices

In some situations or environments, the use of wireless devices may be restricted by the proprietor of the building or responsible representatives of the organization. For example, these situations may include:

. Using wireless equipment in any environment where the risk of interference to other devices or services is perceived or identified as harmful.

If you are uncertain of the applicable policy for the use of wireless equipment in a specific organization or environment, you are encouraged to ask for authorization to use the device prior to turning on the equipment.

The manufacturer is not responsible for any radio or television interference caused by unauthorized modification of the devices included with this product, or the substitution or attachment of connecting

cables and equipment other than specified by the manufacturer. Correction of interference caused by such unauthorized modification, substitution, or attachment is the responsibility of the user.

The manufacturer and its authorized resellers or distributors are not liable for any damage or violation of government regulations that may arise from failing to comply with these guideline documentation that comes with the product.

Postpone router installation until there is no risk of thunderstorm or lightning activity in the area.

Do not overload outlets or extension cords, as this can result in a risk of fire or electric shock. Overloaded AC outlets, extension cords, frayed power cords, damaged or cracked wire insulation, and broken plugs are dangerous. They may result in a shock or fire hazard.

Route power supply cords so that they are not likely to be walked on or pinched by items placed upon or against them. Pay particular attention to cords where they are attached to plugs and convenience receptacles, and examine the point where they exit from the product.

Place this equipment in a location that is close enough to an electrical outlet to accommodate the length of the power cord.

Place this equipment on a stable surface.
When using this device, basic safety precautions should always be followed to reduce the risk of fire, electric shock and injury to persons, including the following:
. Read all of the instructions {listed here and/or in the user manual} before you operate this equipment. Give particular attention to all safety precautions.
Retain the instructions for future reference.
. Comply with all warning and caution statements in the instructions. Observe all warning and caution symbols that are affixed to this equipment.
. Comply with all instructions that accompany this equipment.
. Avoid using this product during an electrical storm. There may be a risk of electric shock from lightning. For added protection for this product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet, and disconnect the cable system. This will prevent damage to the product due to lightning and power surges. We also recommend the use of ESP300 20Kv protection on the input at the switch or network.
. Operate this product only from the type of power source indicated on the product's marking label. If you are not sure of the type of power supplied to your home, consult your dealer or local power company.
. Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in safe operating condition.
It is recommended that the customer install an AC surge protector in the AC outlet to which this device is connected. This is to avoid damaging the equipment by local lightning strikes and other electrical surges.

Different types of cord sets may be used for connections to the main supply circuit. Use only a main line cord that complies with all applicable product safety requirements of the country of use. Installation

of this product must be in accordance with national wiring codes.

Place unit to allow for easy access when disconnecting the power cord/adapter of the device from the AC wall outlet.

Wipe the unit with a clean, dry cloth. Never use cleaning fluid or similar chemicals. Do not spray cleaners directly on the unit or use forced air to remove dust.

This product was qualified under test conditions that included the use of the supplied cables between system components. To be in compliance with regulations, the user must use these cables and install them properly. Connect the unit to a grounding type AC wall outlet using the power adapter supplied with the unit.

Do not cover the device, or block the airflow to the device with any other objects. Keep the device away from excessive heat and humidity and keep the device free from vibration and dust.

Installation must at all times conform to local regulations.

National Restrictions

This device is intended for home and office use in all EU countries (and other countries following the EU directive 1999/5/EC) without any limitation except for the countries mentioned below:

Country	Restriction	Reasons/remarks
Bulgaria	None	General authorization required for outdoor use and public service
France	Outdoor use; limited to 10 mW e.i.r.p. within the band 2454-2483.5 MHz	Military Radiolocation use. Reframing of the 2.4 GHz band has been ongoing in recent years to allow current relaxed regulation. Full implementation planned 2012
Italy	None	If used outside of own premises, general authorization is required
Luxembourg	None	General authorization required for network and service supply(not for spectrum)
Norway	Implemented	This subsection does not apply for the geographical area within a radius of 20 km from the centre of Ny-Ålesund
Russian Federation	None	Only for indoor applications

Note: Please don't use the product outdoors in France.

WEEE regulation

To avoid the potential effects on the environment and human health as a result of the presence of hazardous substances in electrical and electronic equipment, end users of electrical and electronic equipment should understand the meaning of the crossed-out wheeled bin symbol. Do not dispose of WEEE as unsorted municipal waste and have to collect such WEEE separately.

Contact Information For contact information, see www.interlogix.com or www.utcfssecurityproducts.eu.

CONTENTS

Chapter 1.Product Introduction **1**

Chapter 2.Hardware Installation **10**

Chapter 3.Connecting to the AP **12**

Chapter 4.Quick Installation Guide **15**

Chapter 5.Configuring the AP **19**

Chapter 6.Quick Connection to a Wireless Network **101**

Appendix A: Troubleshooting **112**

Appendix B: Glossary **114**

FIGURE

FIGURE 2-1 WMC303-1W-1T-1200 PRODUCT DRAWING 10
FIGURE 2-2 WMC303-1W-1T-1200 PANEL LAYOUT 11
FIGURE 3-1 WMC303-1200 INSTALLATION DIAGRAM 1 12
FIGURE 3-2 WMC303-1200 INSTALLATION DIAGRAM 2 13
FIGURE 3-3 WMC303-1200 INSTALLATION DIAGRAM 3 13
FIGURE 3-4 WMC303-1200 INSTALLATION DIAGRAM 4 14
FIGURE 3-5 WMC303-1200 INSTALLATION DIAGRAM 4 14
FIGURE 4-1 TCP/IP SETTING 16
FIGURE 4-2 WINDOWS START MENU 16
FIGURE 4-3 SUCCESSFUL RESULT OF PING COMMAND 17
FIGURE 4-4 FAILED RESULT OF PING COMMAND 17
FIGURE 4-5 LOGIN BY DEFAULT IP ADDRESS 18
FIGURE 4-6 LOGIN WINDOW 18
FIGURE 5-1 MAIN MENU 19
FIGURE 5-2 SETUP WIZARD 19
FIGURE 5-3 LAN INTERFACE SETUPTOPOLOGY 20
FIGURE 5-4 WIZARD – LAN INTERFACE SETUP 20
FIGURE 5-5 TIME ZONE SETUP TOPOLOGY 20
FIGURE 5-6 WIZARD – TIME ZONE SETUP 21
FIGURE 5-7 WIZARD – WIRELESS 5GHZ BASIC SETTINGS 21
FIGURE 5-8 WIZARD – WIRELESS 5GHZ SECURITY SETUP 22
FIGURE 5-9 5GHZ WIRELESS SECURITY SETUP – WEP SETTING 22
FIGURE 5-10 5GHZ WIRELESS SECURITY SETUP – WPA SETTING 23
FIGURE 5-11 WIZARD – WIRELESS 2.4GHZ BASIC SETTINGS 23
FIGURE 5-12 WIZARD – WIRELESS 2.4GHZ SECURITY SETUP 24
FIGURE 5-13 2.4GHZ WIRELESS SECURITY SETUP – WEP SETTING 24
FIGURE 5-14 2.4GHZ WIRELESS SECURITY SETUP – WPA SETTING 25
FIGURE 5-15 SETUP WIZARD - FINISHED 26
FIGURE 5-16 LAN SETTING 27
FIGURE 5-17 5GHZ WIRELESS MAIN MENU 29
FIGURE 5-18 5GHZ WIRELESS BASIC SETTINGS OF AP 30
FIGURE 5-19 5GHZ WIRELESS BASIC SETTINGS – MULTIPLE AP 32
FIGURE 5-20 5GHZ MULTIPLE-SSID 33
FIGURE 5-21 5GHZ UNIVERSAL REPEATER-1 34
FIGURE 5-22 5GHZ UNIVERSAL REPEATER-2 34
FIGURE 5-23 5GHZ UNIVERSAL REPEATER-3 35
FIGURE 5-24 5GHZ UNIVERSAL REPEATER-4 35
FIGURE 5-25 5GHZ UNIVERSAL REPEATER-5 35
FIGURE 5-26 5GHZ WIRELESS BASIC SETTINGS – CLIENT 36
FIGURE 5-27 CLIENT – SURVEY 38
FIGURE 5-28 CLIENT – AP LIST 39
FIGURE 5-29 CLIENT – SECURITY 39

FIGURE 5-30 CLIENT – STATUS 40
FIGURE 5-31 5GHZ WIRELESS BASIC SETTINGS – WDS 41
FIGURE 5-32 5GHZ WIRELESS BASIC SETTINGS – WDS+AP 43
FIGURE 5-33 WIRELESS ADVANCED SETTINGS – 5GHZ 45
FIGURE 5-34 RF OUTPUT POWER – 5GHZ 47
FIGURE 5-35 WIRELESS SECURITY SETTINGS – 5GHZ 47
FIGURE 5-36 WIRELESS ACCESS CONTROL – 5GHZ 49
FIGURE 5-37 WIRELESS ACCESS CONTROL – DENY 50
FIGURE 5-38 WDS MODE – 5GHZ 52
FIGURE 5-39 WDS SETTINGS – 5GHZ 52
FIGURE 5-40 WDS – SET SECURITY 53
FIGURE 5-41 SITE SURVEY – 5GHZ 54
FIGURE 5-42 WPS-PBC – 5GHZ-1 56
FIGURE 5-43 WPS-PBC – 5GHZ-2 56
FIGURE 5-44 WPS-PIN – 5GHZ-1 57
FIGURE 5-45 WPS-PIN – 5GHZ-2 57
FIGURE 5-46 WPS-PIN – 5GHZ-3 57
FIGURE 5-47 SCHEDULE - 5GHZ 58
FIGURE 5-48 2.4GHZ WIRELESS MAIN MENU 59
FIGURE 5-49 2.4GHZ WIRELESS BASIC SETTINGS – AP 60
FIGURE 5-50 2.4GHZ WIRELESS BASIC SETTINGS – MULTIPLE AP 62
FIGURE 5-51 2.4GHZ MULTIPLE-SSID 63
FIGURE 5-52 2.4GHZ UNIVERSAL REPEATER-1 64
FIGURE 5-53 2.4GHZ UNIVERSAL REPEATER-2 64
FIGURE 5-54 2.4GHZ UNIVERSAL REPEATER-3 65
FIGURE 5-55 2.4GHZ UNIVERSAL REPEATER-4 65
FIGURE 5-56 2.4GHZ UNIVERSAL REPEATER-5 65
FIGURE 5-57 2.4GHZ WIRELESS BASIC SETTINGS – CLIENT 66
FIGURE 5-58 CLIENT – SURVEY 68
FIGURE 5-59 CLIENT – AP LIST 69
FIGURE 5-60 CLIENT – SECURITY 70
FIGURE 5-61 CLIENT – STATUS 70
FIGURE 5-62 2.4GHZ WIRELESS BASIC SETTINGS – WDS 71
FIGURE 5-63 2.4GHZ WIRELESS BASIC SETTINGS – WDS+AP 73
FIGURE 5-64 WIRELESS ADVANCED SETTINGS – 2.4GHZ 75
FIGURE 5-65 RF OUTPUT POWER – 2.4GHZ 77
FIGURE 5-66 WIRELESS SECURITY SETTINGS – 2.4GHZ 78
FIGURE 5-67 WIRELESS ACCESS CONTROL – 2.4GHZ 80
FIGURE 5-68 WIRELESS ACCESS CONTROL – DENY 81
FIGURE 5-69 WDS MODE – 2.4GHZ 82
FIGURE 5-70 WDS SETTINGS – 2.4GHZ 83
FIGURE 5-71 WDS – SET SECURITY 83
FIGURE 5-72 SITE SURVEY – 2.4GHZ 85
FIGURE 5-73 WPS-PBC – 2.4GHZ-1 87
FIGURE 5-74 WPS-PBC – 2.4GHZ-2 87

FIGURE 5-75 WPS-PIN – 2.4GHZ-1 88
FIGURE 5-76 WPS-PIN – 2.4GHZ-2 88
FIGURE 5-77 WPS-PIN – 2.4GHZ-3 88
FIGURE 5-78 SCHEDULE – 2.4GHZ 89
FIGURE 5-79 MANAGEMENT – MAIN MENU 90
FIGURE 5-80 STATUS 91
FIGURE 5-81 STATISTICS 92
FIGURE 5-82 TIME ZONE SETTINGS 93
FIGURE 5-83 SCHEDULE REBOOT 94
FIGURE 5-84 SCHEDULE REBOOT - EXAMPLE 95
FIGURE 5-85 SYSTEM LOG 96
FIGURE 5-86 UPGRADE FIRMWARE 97
FIGURE 5-87 SAVE/RELOAD SETTINGS 98
FIGURE 5-88 PASSWORD SETUP 99
FIGURE 5-89 LED CONTROL 100
FIGURE 5-90 LOGOUT 100
FIGURE 6-1 SYSTEM TRAY – WIRELESS NETWORK ICON 101
FIGURE 6-2 CHOOSE A WIRELESS NETWORK 101
FIGURE 6-3 ENTER THE NETWORK KEY 102
FIGURE 6-4 CHOOSE A WIRELESS NETWORK -- CONNECTED 102
FIGURE 6-5 NETWORK ICON 103
FIGURE 6-6 WLAN AUTOCONFIG 103
FIGURE 6-7 TYPE THE NETWORK KEY 104
FIGURE 6-8 CONNECTING TO A NETWORK 104
FIGURE 6-9 CONNECTED TO A NETWORK 104
FIGURE 6-10 MAC OS – NETWORK ICON 105
FIGURE 6-11 HIGHLIGHT AND SELECT THE WIRELESS NETWORK 105
FIGURE 6-12 ENTER THE PASSWORD 106
FIGURE 6-13 CONNECTED TO THE NETWORK 106
FIGURE 6-14 SYSTEM PREFERENCES 107
FIGURE 6-15 SYSTEM PREFERENCES -- NETWORK 107
FIGURE 6-16 SELECT THE WIRELESS NETWORK 108
FIGURE 6-17 IPHONE – SETTINGS ICON 109
FIGURE 6-18 WI-FI SETTING 109
FIGURE 6-19 WI-FI SETTING – NOT CONNECTED 110
FIGURE 6-20 TURN ON WI-FI 110
FIGURE 6-21 IPHONE -- ENTER THE PASSWORD 111
FIGURE 6-22 IPHONE -- CONNECTED TO THE NETWORK 111

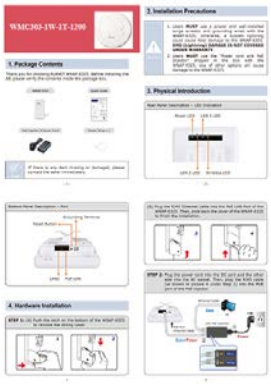
Chapter 1. Product Introduction

1.1 Package Contents

Thank you for choosing IFS WMC303-1W-1T-1200. Before installing the AP, please verify the contents inside the package box.

WMC303-1W-1T-1200

Quick Guide



CD-ROM

(User Manual included)

Mounting Bracket

Mounting Kit

Note

If there is any item missing or damaged, please contact the seller immediately.

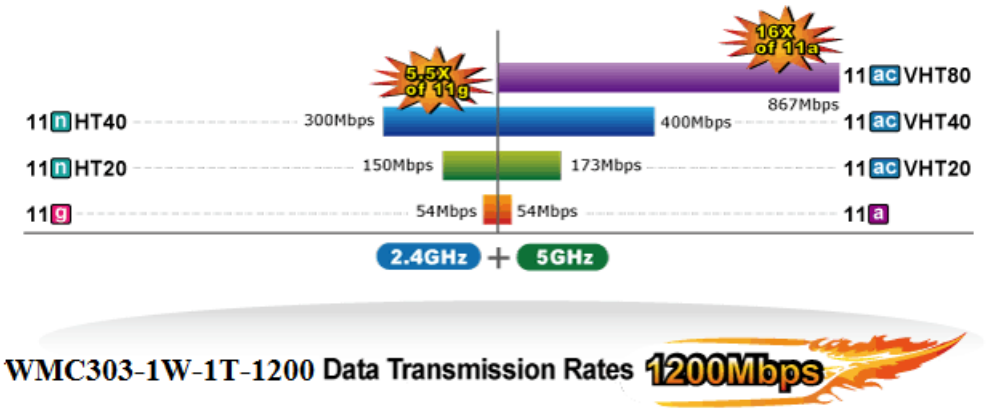
1.2 Product Description

Ceiling Mount Designed for Highly-efficient Wireless Coverage

Featuring attractive flying saucer appearance and ceiling-mount design, the WMC303-1200 can be firmly installed on the ceiling or the wall conveniently. The ceiling-mount design is smartly integrated into the environment. Its streamlined body without the protruding antennas also gives effects of embellishment in the surroundings. Moreover, the WMC303-1200 is compliant with the IEEE 802.3at PoE standard, so it is easy and flexible in client-side installation. It is definitely nice to have this eye-catching access point mount on the ceilings and walls of villas, hotels, exhibit halls, and other establishments.

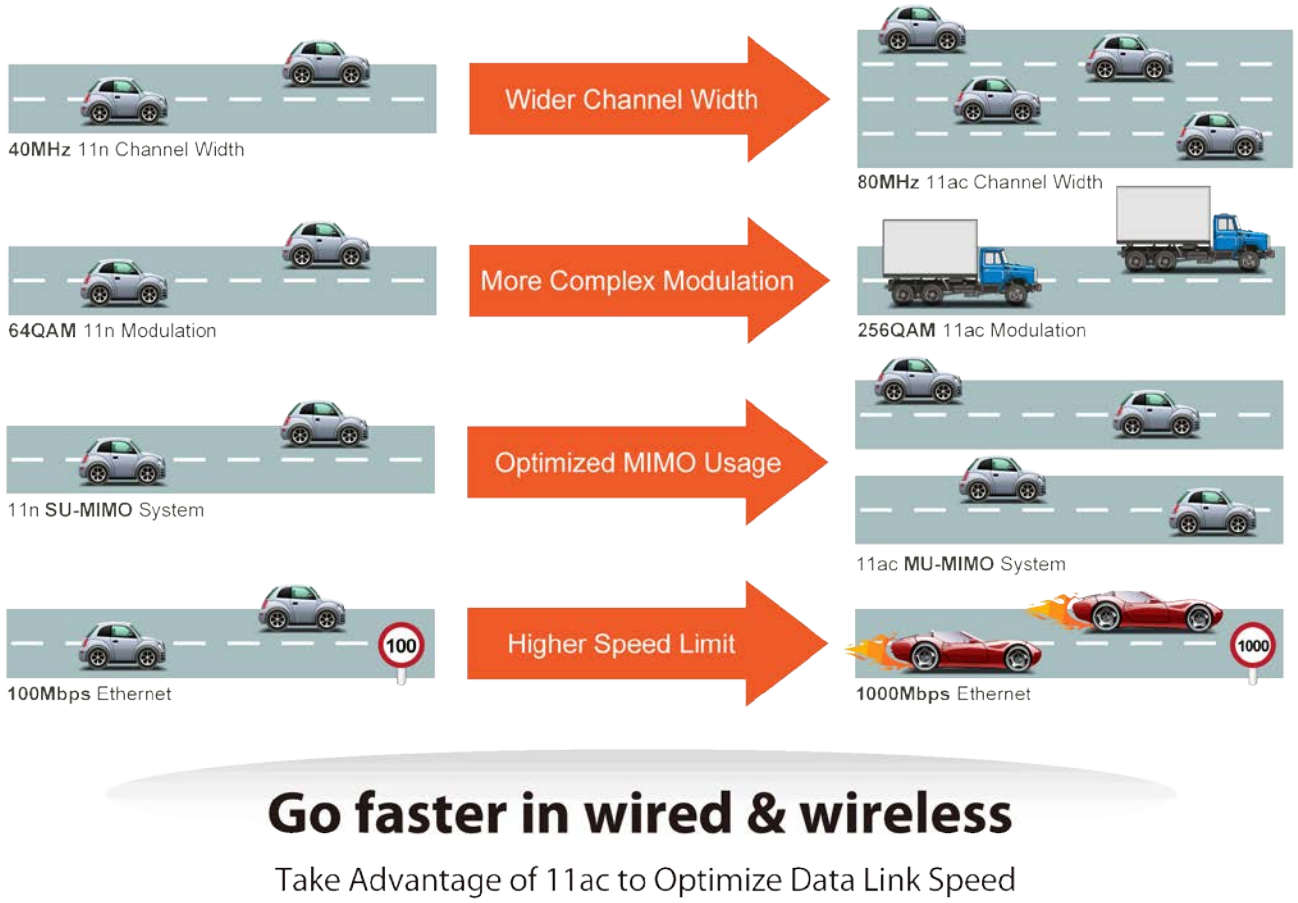
Brand-new 11ac Wireless Technology

The WMC303-1200 supports IEEE 802.11a/b/g/n/ac dual band standards with 2T2R MIMO technology; therefore, it provides the wireless speed up to 300+867Mbps, which is 16X faster than the 11a access point at 5GHz frequency and 5.5X faster than the 11g access point at 2.4GHz frequency. Moreover, the WMC303-1200 is equipped with Gigabit Ethernet Port. Compared with the general wireless APs, the WMC303-1200 offers faster transmission speed for the network applications and less interference to enhance data throughput. The incredible wireless speed makes it ideal for handling multiple HD movie streams, high-resolution on-line games, stereo music, VoIPs and data streams at the same time stably and smoothly.



11ac Innovations Bring Excellent Data Link Speed

The WMC303-1200 is built-in with high power amplifier and 4 highly-sensitive antennas which provide stronger signal and excellent coverage even in the wide-ranging or bad environment. With adjustable transmit power option, the administrator can flexibly reduce or increase the output power for various environments, thus reducing interference to achieve maximum performance. To provide extremely high-speed user experience, the WMC303-1200 adopts IEEE 802.11ac technology to extend the 802.11n 40MHz channel binding to 80MHz and the implementation of 256-QAM modulation where higher transmitting/receiving rates go up to 867Mbps in 5GHz less interference frequency band. In addition, the WMC303-1200 is equipped with gigabit LAN port to eliminate the restriction of 100Mbps Fast Ethernet wired connection to let users fully enjoy the high speed provided by wireless. The IEEE 802.11ac also optimizes MU-MIMO (Multi-User MIMO) mechanism to serve multiple devices simultaneously.

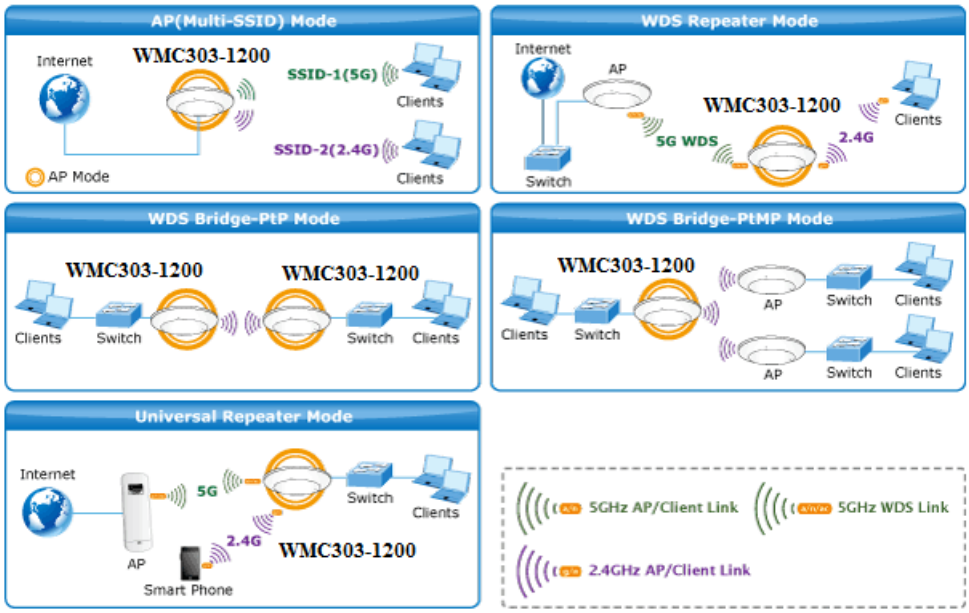


Full Support of Wireless Security Encryption and Wireless Value-added Features

In aspect of security, besides 64/128-bit WEP encryption, the WMC303-1200 is integrated with WPA / WPA2, WPA-PSK / WPA2-PSK and 802.1x Radius authority to secure and protect your wireless LAN. It provides the wireless MAC filtering and SSID broadcast control to consolidate the wireless network security and prevent unauthorized wireless connection. Being an access point, the WMC303-1200 supports the VLAN function to allow multiple SSIDs (10 sets of SSIDs) to access Internal VLAN topology. Moreover, its Wi-Fi Multimedia (WMM) mechanism provides enhanced QoS over wireless connection for better performance in multimedia transmission like on-line gaming and video streaming, which are classified as a top priority.

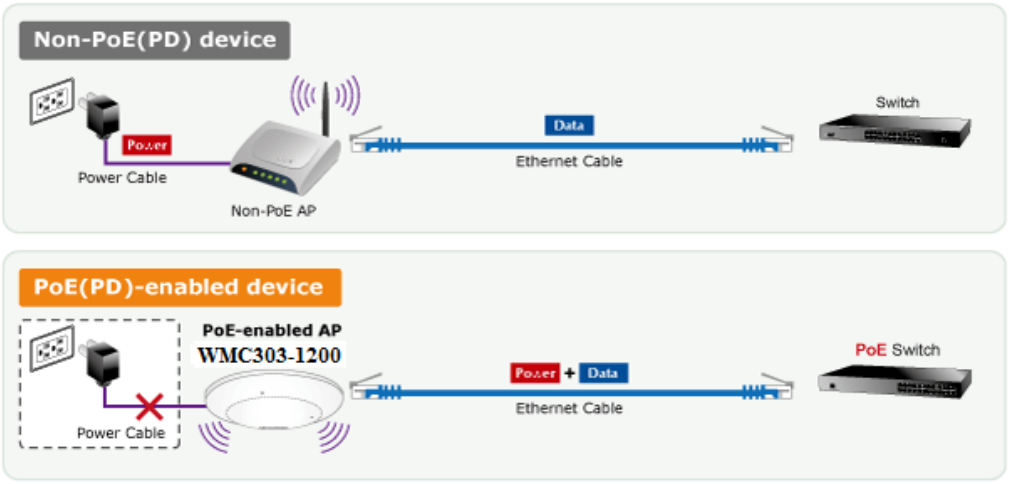
Multiple Operation Modes for Various Applications

The WMC303-1200 supports AP, Client, WDS Bridge, Repeater and Universal Repeater modes, through which it provides more flexibility for users when wireless network is established. Compared with general wireless access point, the WMC303-1W-1T-1200 offers more powerful and flexible capability for wireless clients.



Flexible Deployment with PoE Feature

Compliant with the IEEE 802.3at Power over Ethernet standard, the WMC303-1200 can be powered and networked by a single UTP cable. It thus reduces the needs of extra cables and dedicated electrical outlets on the wall, ceiling or any other place where it is difficult to reach. The wireless network deployment becomes more flexible and worry-free from the power outlet locations.



Easy Installation and Management

With user-friendly Web UI and step-by-step Quick Setup Wizard, the WMC303-1200 is easy to install, even for users who never experience setting up a wireless network. Furthermore, with SNMP-based management interface, the WMC303-1200 is convenient to be managed and configured remotely in a small business wireless network.

1.3 Product Features

- **Standard Compliant Hardware Interface**
  - Complies with IEEE 802.11ac (draft 2.0) and IEEE 802.11a/b/g/n standards
  - 1 x 10/100/1000Base-TX Port with 1-port PoE (PD, Powered Device)
  - IEEE 802.3at Power over Ethernet design
- **RF Interface Characteristics**
  - Features 2.4GHz (802.11b/g/n) and 5GHz (802.11a/n/ac) concurrent dual band for more efficiency of carrying high load traffic
  - 2T2R MIMO technology for enhanced throughput and coverage
  - Provides multiple adjustable transmit power control
  - High speed up to 1.2Gbps (300Mbps for 2.4GHz + 867Mbps for 5GHz) wireless data rate
- **Comprehensive Wireless Advanced Features**
  - Multiple Wireless Modes: AP, Client, WDS PtP/ PtMP, WDS Repeater, Universal Repeater
  - Supports up to 10 multiple-SSIDs (2.4GHz+5GHz) to allow users to access different networks through a single AP
  - Supports VLAN function to limit the clients to access the specific internal network resource
  - Supports WMM (Wi-Fi Multimedia) and wireless QoS to enhance the efficiency of multimedia application
  - Supports IAPP (Inter Access Point Protocol) and wireless roaming to enable clients to roam across different wireless networks
  - Supports 5-level Transmitting Power Control to adapt various environments
  - Supports wireless schedule to automatically enable or disable the wireless function based on predefined schedule
- **Secure Network Connection**
  - Advanced security: 64/128-bit WEP, WPA / WPA2, WPA-PSK / WPA2-PSK (TKIP/AES encryption) and 802.1x Radius Authentication
  - Supports MAC address filtering
- **Easy Installation & Management**
  - Flexible deployment with standard 802.3at PoE/ PD supported
  - Web-based UI and Quick Setup Wizard for easy configuration
  - Remote Management allows configuration from a remote site
  - SNMP-based management interface
  - System status monitoring includes DHCP Client and System Log

1.4 Product Specifications

Product	**WMC303-1W-1T-1200** 1200Mbps 802.11ac Dual Band Ceiling Mount Wireless Access Point	
Hardware Specifications		
Interfaces	LAN	1 x 10/100/1000Base-T RJ45 port Auto-negotiation and Auto MDI/MDI-X
Antennas	Gain:	2 x 2.4GHz 2.5dBi PCBA antenna 2 x 5GHz 4dBi PCBA antenna
Reset Button	Reset button on the top cover Press over 7 seconds to reset the device to factory default	
LED Indicators	PWR Allow LED to turn off via software control	
Material	Plastic	
Dimensions (Φ x H)	194 x 49 mm	
Weight	300 ±5g	
Power Requirements	802.3at PoE, 48-56V DC input	
Power Consumption	20W (max.)	
Mounting	Ceiling Mount	
Wireless Interface Specifications		
Standard	IEEE 802.11ac (Draft 2.0) 5GHz IEEE 802.11a/n 5GHz IEEE 802.11b/g/n 2.4GHz	
Antenna Structure	802.11ac: 2T2R MU-MIMO 802.11n: 2T2R MIMO	
Modulation	DSSS	
Data Modulation	802.11ac: OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM) 802.11a/g/n: OFDM (BPSK / QPSK / 16QAM / 64QAM) 802.11b: DSSS (DBPSK / DQPSK / CCK)	
Band Mode	2.4G / 5G concurrent mode	
Frequency Range	2.4GHz	America/ FCC: 2.412~2.462GHz Europe/ ETSI: 2.412~2.484GHz
	5GHz	America/ FCC: 5.180~5.240GHz, 5.725~5.850GHz Europe/ ETSI: 5.180~5.240GHz
Operating Channels	2.4GHz	America/ FCC: 1~11 Europe/ ETSI: 1~13
	5GHz	America/ FCC: 36, 40, 44, 48, 149, 153, 157, 161, 165 Europe/ ETSI: 36, 40, 44, 48 5GHz channel list will vary in different countries according to their regulations.
Channel Width	802.11ac: 20/40/80MHz 802.11n: 20/40MHz	

Data Transmission Rates	802.11ac (VHT20, Nss2-MCS8): Up to 173.3Mbps 802.11ac (VHT40, Nss2-MCS9): Up to 400Mbps 802.11ac (VHT80, Nss2-MCS9): Up to 867Mbps
	802.11n (HT40): 270/243/216/162/108/81/54/27Mbps 135/121.5/108/81/54/40.5/27/13.5Mbps (dynamic)
	802.11n (HT20): 130/117/104/78/52/39/26/13Mbps 65/58.5/52/39/26/19.5/13/6.5Mbps (dynamic)
	802.11g: 54/48/36/24/18/12/9/6Mbps (dynamic)
	802.11b: 11/5.5/2/1Mbps (dynamic)
Transmission Distance	802.11ac (draft): up to 30m 802.11n: up to 70m 802.11g: up to 30m **The estimated transmission distance is based on the theory. The actual distance will vary in different environments.**
Max. RF Power	**5GHz:** 802.11ac (VHT20): 22dBm 802.11ac (VHT40): 22dBm 802.11ac (VHT80): 22dBm 802.11n (HT20): 22dBm 802.11n (HT40): 22dBm 802.11a: 22dBm
	2.4GHz: 802.11n: 17 ±2.5dBm 802.11b/g: 20 ±2.5dBm
Receive Sensitivity	**5GHz:** 802.11ac (VHT20): -91dBm @ Nss1-MCS0, -64dBm @ Nss2-MCS8 802.11ac (VHT40): -89dBm @ Nss1-MCS0, -59dBm @ Nss2-MCS9 802.11ac (VHT80): -86dBm @ Nss1-MCS0, -56dBm @ Nss2-MCS9 802.11n (HT20): -92dBm @ MCS0, -71dBm @ MCS7 802.11n (HT40): -89dBm @ MCS0, -66dBm @ MCS15 802.11a: -93 @ 6Mbps, -75dBm @ 54Mbps
	2.4GHz: 802.11n 20MHz (MCS7): -69dBm @10% PER 802.11n 40MHz (MCS15): -66dBm @10% PER 802.11g (54Mbps): -74dBm @10% PER 802.11b (11Mbps): -88dBm @10% PER
Software Features	
Wireless Mode	■ Universal Repeater (AP+Client) ■ Repeater (WDS+AP) ■ AP (Access Point) ■ WDS PTP (Point to Point) ■ WDS PTMP (Point to Multipoint) ■ Client
Encryption Security	■ WEP (64/128-bit) encryption security ■ WPA / WPA2 (TKIP/AES) ■ WPA-PSK / WPA2-PSK (TKIP/AES)
Wireless Security	Provides wireless LAN ACL (Access Control List) filtering
	Wireless MAC address filtering

	Supports WPS (Wi-Fi Protected Setup)
	Enable/ Disable SSID Broadcast
Wireless Advanced	WMM (Wi-Fi Multimedia): 802.11e Wireless QoS
	Multiple SSID: up to 5 at 2.4GHz and 5GHz, respectively
	Wireless Isolation: Enables to isolate each connected wireless client from communicating with each other
	IAPP (Inter Access Point Protocol): 802.11f Wireless Roaming
	Provides Wireless Statistics
Max. Clients	Wire: 253 2.4GHz Wireless: 32 5GHz Wireless: 32
LAN	Built-in DHCP server supporting static IP address distributing
	Supports UPnP
	Supports 802.1d Spanning Tree
	Supports 802.1Q VLAN
System Management	Web-based (HTTP) management interface
	SNTP time synchronize
	Easy firmware upgrade
	Supports Scheduling Reboot
Standards Conformance	
IEEE Standards	IEEE 802.11ac (Draft 2.0, 2T2R, up to 867Mbps) IEEE 802.11n (2T2R, up to 300Mbps) IEEE 802.11g IEEE 802.11b IEEE 802.11i IEEE 802.3 10Base-T IEEE 802.3u 100Base-TX IEEE 802.3ab 1000Base-T IEEE 802.3x Flow Control
Other Protocols and Standards	CSMA/CA, CSMA/CD, TCP/IP, DHCP, ICMP, SNTP
Environment & Certification	
Temperature	Operating: 0 ~ 50 degrees C Storage: -40 ~ 70 degrees C
Humidity	Operating: 10 ~ 90% (non-condensing) Storage: 5 ~ 90% (non-condensing)
Regulatory	FCC Part 15B & 15C, IC, RoHS

Chapter 2. Hardware Installation

Please follow the instructions below to connect WMC303-1W-1T-1200 to the existing network devices and your computers.

2.1 Product Outlook

- **Dimensions**: 194 x 49 mm (Φ x H)
- **Drawing :**

Figure 2-1 WMC303-1W-1T-1200 Product Drawing

2.1.1 Panel Layout

The front and rear panel provide a simple interface monitoring the AP. Figure 2-2 shows the hardware interface of the WMC303-1W-1T-1200.

Hardware Interface

Figure 2-2 WMC303-1W-1T-1200 Panel Layout

2.1.2 Hardware Description

LED definition

LED	COLOR	STATUS	FUNCTION
PWR	Green	On	Device power on
	Green	Off	Device power off (control by S/W)
	Orange	On	System initializing, turned it off when system completed
	Orange	Blinking	Detect and identify the LED (control by S/W) 1) Position LED on: LED blinks continuously. 2) Position LED off: the LED is off.

Button definition

Object	Description
Reset	To restore to the factory default setting, press and hold the Reset Button over 7 seconds, and then release it.

Port definition

Object	Description
PoE Port (802.3at PoE)	10/100/1000Mbps RJ-45 port , Auto MDI/ MDI-X Connect PoE port to the IEEE 802.3at PSE to power on the device.

Chapter 3. Connecting to the AP

3.1 System Requirements

- Broadband Internet Access Service (Cable/xDSL/Ethernet connection)
- One IEEE 802.3at PoE switch (supply power to the WMC303-1200)
- PCs with a working Ethernet Adapter and an Ethernet cable with RJ-45 connectors
- PCs running Windows 98/ME, NT4.0, 2000/XP, Windows Vista / Win 7, MAC OS 9 or later, Linux, UNIX or other platforms compatible with **TCP/IP** protocols

Note

1. The AP in the following instructions refers to IFS WMC303-1200.
2. It is recommended to use Internet Explorer 7.0 or above to access the AP.

3.2 Installing the AP

Before installing the AP, make sure your PoE switch is connected to the Internet through the broadband service successfully at this moment. If there is any problem, please contact your local ISP. After that, please install the AP according to the following steps. Don't forget to pull out the power plug and keep your hands dry.

Step 1. Drill the outlet hole indicated on the mounting label and stick the given mounting label to the installation location to let the Ethernet cable penetrate the outlet hole. Then, drill the mounting holes as indicated on the label.

Figure 3-1 WMC303-1200 Installation Diagram 1

Step 2. Take the mounting bracket, put it on the target place by aligning the holes and fix it with the supplied

screws. ※ IEEE 802.3at PoE switch is required.

Figure 3-2 WMC303-1200 Installation Diagram 2

Step 3. Plug the RJ-45 Ethernet cable into the PoE port of the WMC303-1W-1T-1200.

Figure 3-3 WMC303-1200 Installation Diagram 3

Step 4. Load the device into the mounting bracket, and be sure the device is mated with two fixed screws. Then, rotate the device clockwise to lock it in position.

Figure 3-4 WMC303-1200 Installation Diagram 4

Step 5. Plug the other end of the Ethernet cable into the PoE switch.

Figure 3-5 WMC303-1200 Installation Diagram 4

Chapter 4. Quick Installation Guide

This chapter will show you how to configure the basic functions of your AP within minutes.

A computer with wired Ethernet connection to the Wireless AP is required for the first-time configuration.

4.1 Manual Network Setup - TCP/IP Configuration

The default IP address of the WMC303-1200 is **192.168.0.253**. And the default Subnet Mask is 255.255.255.0. These values can be changed as you want. In this guide, we use all the default values for description.

Connect the WMC303-1200 with your PC by an Ethernet cable plugging in LAN port on one side and in LAN port of PC on the other side. Please power on the WMC303-1200 by PoE switch through the PoE port.

In the following sections, we'll introduce how to install and configure the TCP/IP correctly in **Windows 7**. And the procedures in other operating systems are similar. First, make sure your Ethernet Adapter is working, and refer to the Ethernet adapter manual if needed.

4.1.1 Configuring the IP Address Manually

Summary:

- Set up the TCP/IP Protocol for your PC.
- Configure the network parameters. The IP address is 192.168.1.xxx (if the default IP address of the WMC303-1200 is 192.168.0.253, and the DSL router is 192.168.0.253, the "xxx" can be configured to any number from 1 to 252), Subnet Mask is 255.255.255.0.

1 Select **Use the following IP address** radio button, and then configure the IP address of the PC.

2 For example, as the default IP address of the WMC303-1200 is 192.168.0.253 and the DSL router is 192.168.0.253, you may choose from 192.168.0.1 to 192.168.0.252.

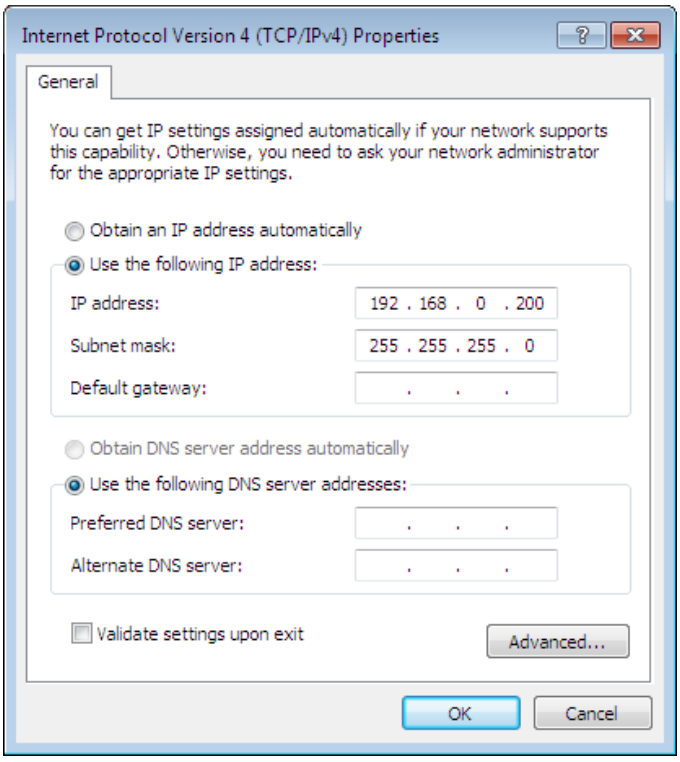

Internet Protocol Version 4 (TCP/IPv4) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
192 . 168 . 0 . 200
Subnet mask:
255 . 255 . 255 . 0
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Validate settings upon exit
Advanced...
OK
Cancel

Figure 4-1 TCP/IP Setting

Now click **OK** to save your settings.

Now, you can run the Ping command in the **command prompt** to verify the network connection between your PC and the AP. The following example is in **Windows 7** OS. Please follow the steps below:

1. Click on **Start > Run**.

2. Type "**cmd**" in the Search box.

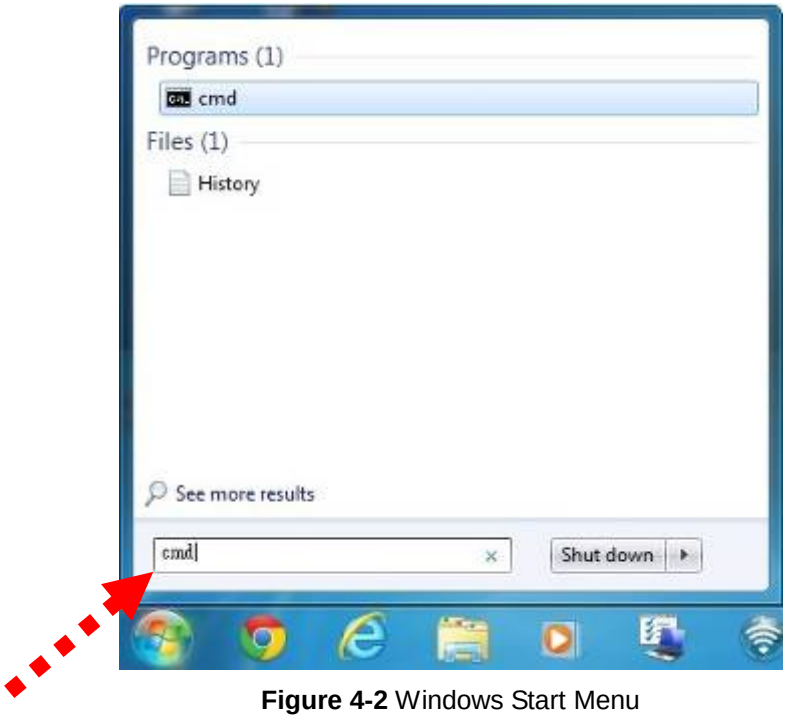


Figure 4-2 Windows Start Menu

3. Open a command prompt, type ping **192.168.0.253** and then press **Enter**.

- If the result displayed is similar to **Figure 4-3**, it means the connection between your PC and the AP has been established well.

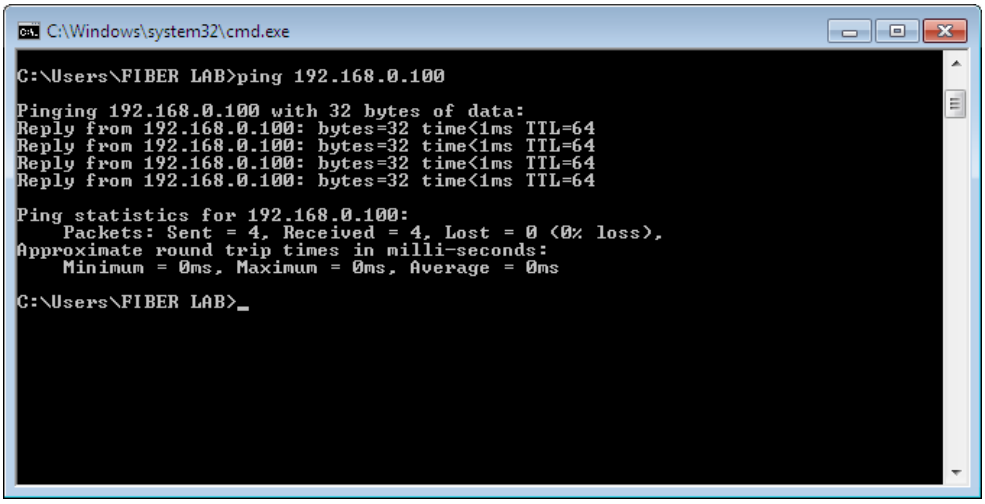

C:\Windows\system32\cmd.exe
C:\Users\FIBER LAB>ping 192.168.0.100
Pinging 192.168.0.100 with 32 bytes of data:
Reply from 192.168.0.100: bytes=32 time<1ms TTL=64
Reply from 192.168.0.100: bytes=32 time<1ms TTL=64
Reply from 192.168.0.100: bytes=32 time<1ms TTL=64
Reply from 192.168.0.100: bytes=32 time<1ms TTL=64
Ping statistics for 192.168.0.100:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\Users\FIBER LAB>

Figure 4-3 Successful result of Ping command

- If the result displayed is similar to **Figure 4-4**, it means the connection between your PC and the AP has failed.

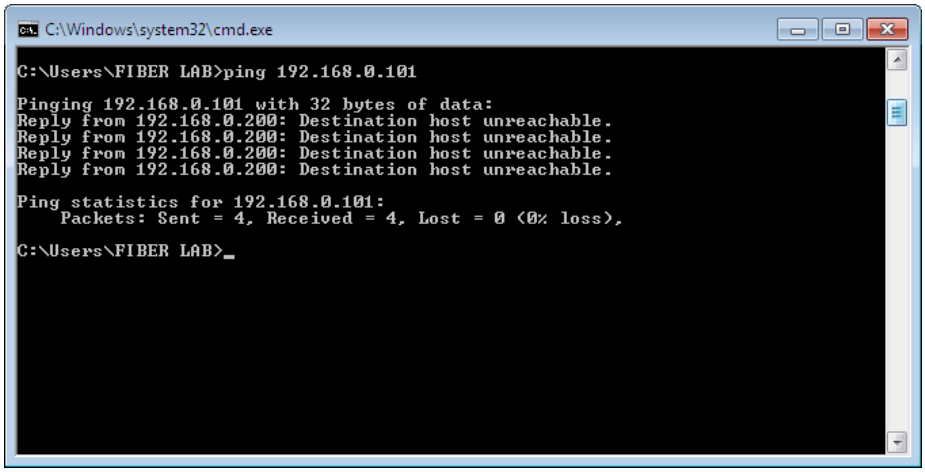

C:\Windows\system32\cmd.exe
C:\Users\FIBER LAB>ping 192.168.0.101
Pinging 192.168.0.101 with 32 bytes of data:
Reply from 192.168.0.200: Destination host unreachable.
Reply from 192.168.0.200: Destination host unreachable.
Reply from 192.168.0.200: Destination host unreachable.
Reply from 192.168.0.200: Destination host unreachable.
Ping statistics for 192.168.0.101:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
C:\Users\FIBER LAB>

Figure 4-4 Failed Result of Ping Command

If the address is 0.0.0.0, check your adapter installation, security settings, and the settings on your AP. Some firewall software programs may block a DHCP request on newly installed adapters.

4.2 Starting Setup in the Web UI

It is easy to configure and manage the AP with the web browser.

Step 1. To access the configuration utility, open a web-browser and enter the default IP address http://192.168.0.253 in the web address field of the browser.

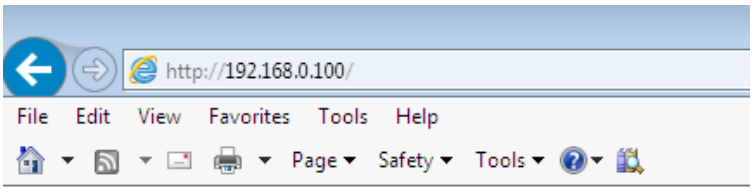


Figure 4-5 Login by default IP address

After a moment, a login window will appear. Enter **admin** for the User Name and Password, both in lower case letters. Then click the **OK** button or press the **Enter** key.

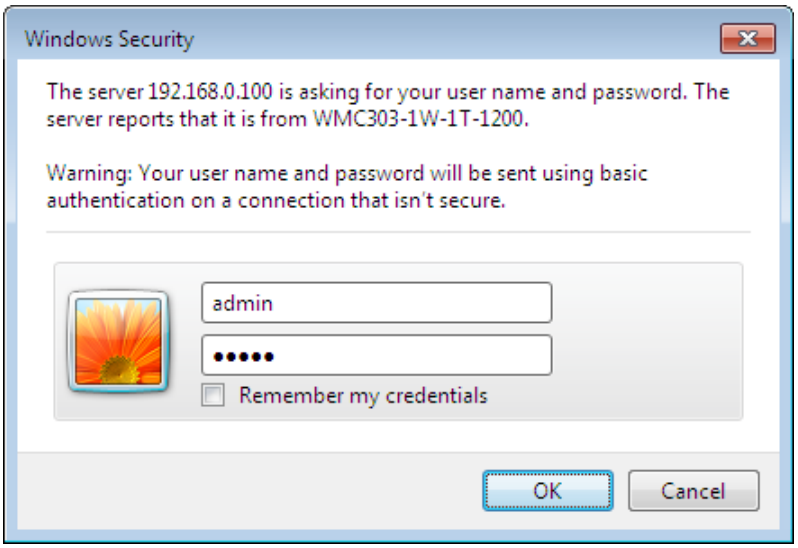

Windows Security
The server 192.168.0.100 is asking for your user name and password. The server reports that it is from WMC303-1W-1T-1200.
Warning: Your user name and password will be sent using basic authentication on a connection that isn't secure.
admin
Remember my credentials
OK
Cancel

Figure 4-6 Login Window

Default IP Address: **192.168.0.100**

Default User name: **admin**

Default Password: **admin**

Note

If the above screen does not pop up, it may mean that your web-browser has been set to a proxy. Go to Tools menu>Internet Options>Connections>LAN Settings on the screen that appears, cancel the Using Proxy checkbox, and click OK to finish it.

Chapter 5. Configuring the AP

This chapter delivers a detailed presentation of AP's functionalities and features under 6 main menus below, allowing you to manage the AP with ease.

Figure 5-1 Main Menu

During operation, if you are not clear about a certain feature, you can refer to the "**Help**" section in the right side of the screen to read all related helpful info.

5.1 Setup Wizard

The Setup Wizard will guide the user to configure the WMC303-1200 easily and quickly. Select the Setup Wizard on the left side of the screen and by clicking on Next on the Setup Wizard screen shown below, you will then name your WMC303-1200 and set up its security.

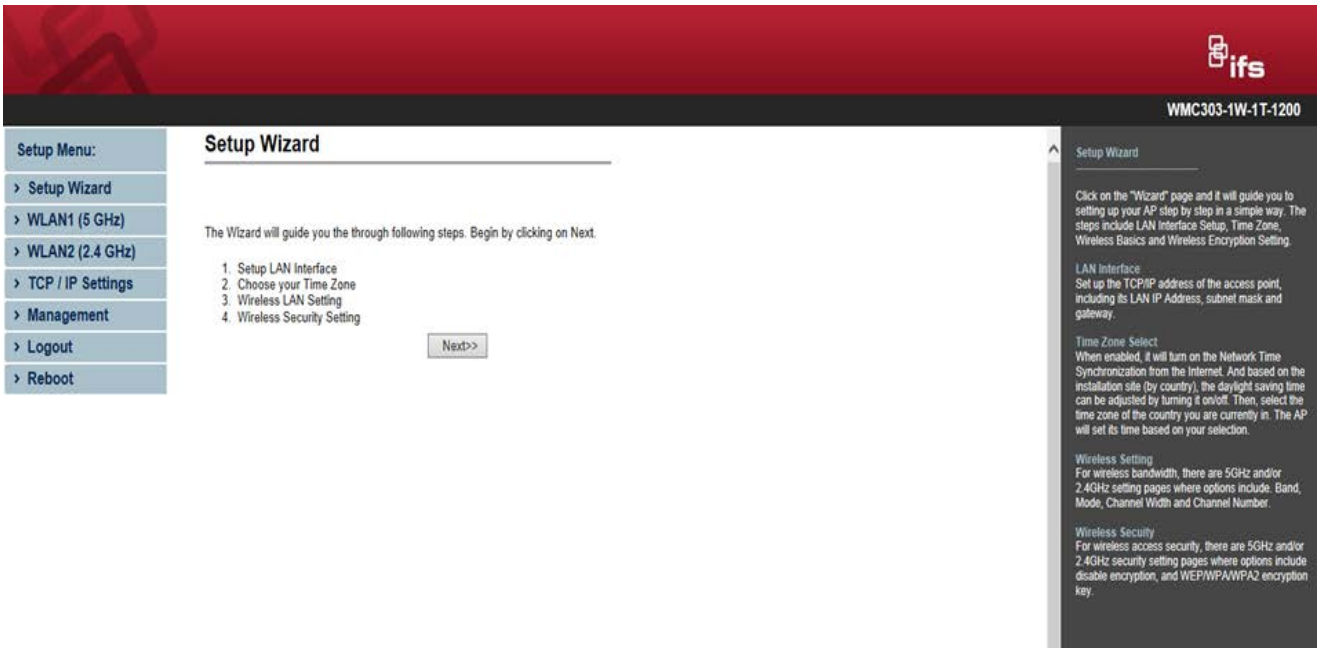

ifs
WMC303-1W-1T-1200
Setup Menu:
› Setup Wizard
› WLAN1 (5 GHz)
› WLAN2 (2.4 GHz)
› TCP / IP Settings
› Management
› Logout
› Reboot
Setup Wizard
The Wizard will guide you the through following steps. Begin by clicking on Next.
1. Setup LAN Interface
2. Choose your Time Zone
3. Wireless LAN Setting
4. Wireless Security Setting
Next>>
Setup Wizard
Click on the "Wizard" page and it will guide you to setting up your AP step by step in a simple way. The steps include LAN Interface Setup, Time Zone, Wireless Basics and Wireless Encryption Setting.
LAN Interface
Set up the TCP/IP address of the access point, including its LAN IP Address, subnet mask and gateway.
Time Zone Select
When enabled, it will turn on the Network Time Synchronization from the Internet. And based on the installation site (by country), the daylight saving time can be adjusted by turning it on/off. Then, select the time zone of the country you are currently in. The AP will set its time based on your selection.
Wireless Setting
For wireless bandwidth, there are 5GHz and/or 2.4GHz setting pages where options include: Band, Mode, Channel Width and Channel Number.
Wireless Security
For wireless access security, there are 5GHz and/or 2.4GHz security setting pages where options include disable encryption, and WEP/WPA/WPA2 encryption key.

Figure 5-2 Setup Wizard

Step 1: LAN Interface Setup

Figure 5-3 LAN Interface SetupTopology

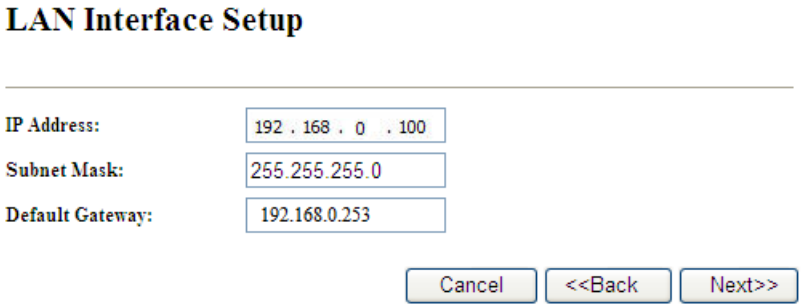


Figure 5-4 Wizard – LAN Interface Setup

The page includes the following fields:

Object	Description
IP Address	Displays the current IP address of the AP. (Default = **192.168.0.100**)
Subnet Mask	Displays LAN mask of the AP. (Default = **255.255.255.0**)
Default Gateway	IP address of the associated router. (Default = **192.168.0.253**)

Step 2: Time Zone Setting

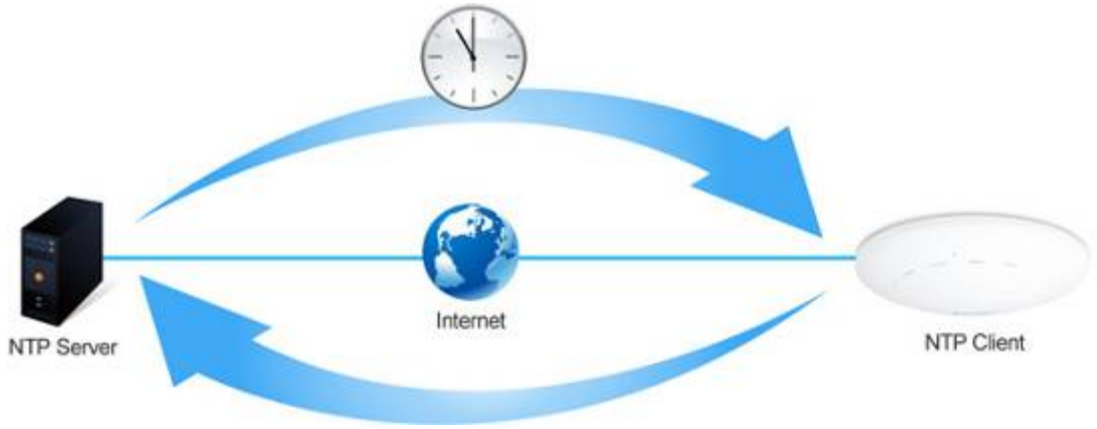


Figure 5-5 Time Zone Setup Topology

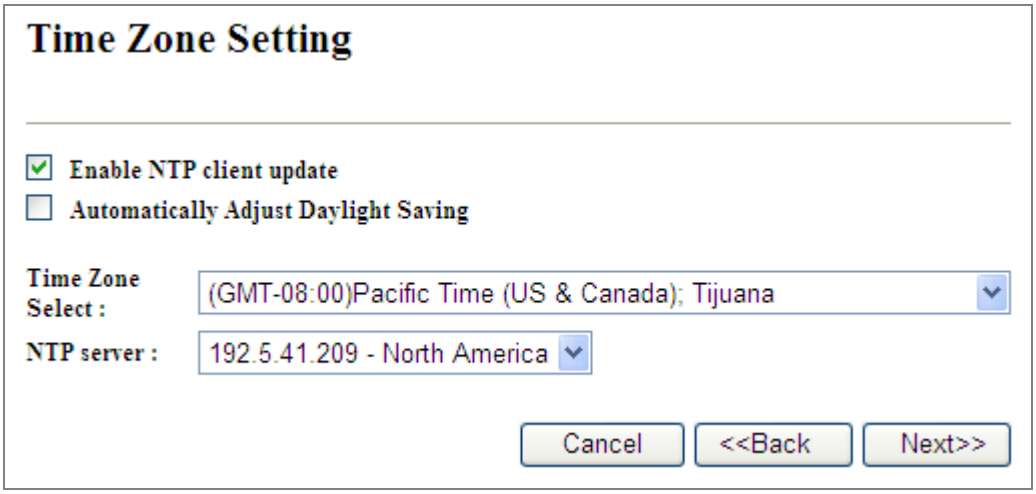


Figure 5-6 Wizard – Time Zone Setup

The page includes the following fields:

Object	Description
Enable NTP client update	Check this box to connect NTP Server and synchronize internet time.
Automatically adjust Daylight Saving	Check this box and system will adjust the daylight saving automatically.
Time Zone Select	Select the Time Zone from the drop-down menu.
NTP Server	Select the NTP Server from the drop-down menu.
Enable NTP client update	Check this box to connect NTP Server and synchronize internet time.

Step 3: Wireless 5GHz Basic Settings

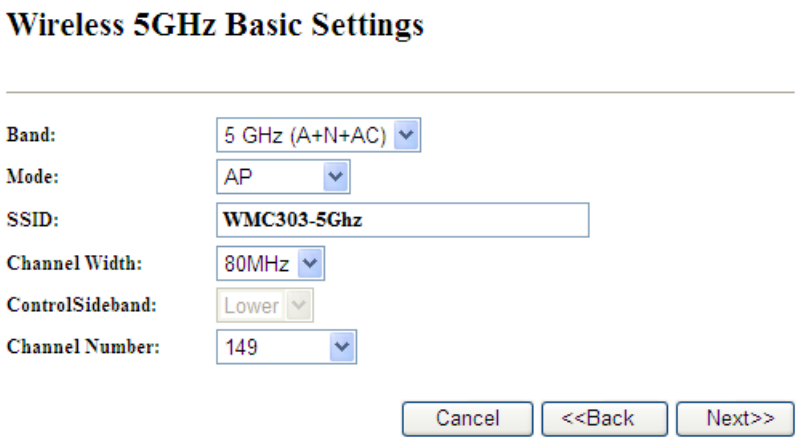


Figure 5-7 Wizard – Wireless 5GHz Basic Settings

The page includes the following fields:

Object	Description
Band	Supports 802.11a, 802.11n, 802.11ac and mixed. Please choose its band according to your clients.
Mode	Supports AP, Client, WDS and AP+WDS mode.
SSID	Service Set Identifier identifies your wireless network.
Channel Width	Select 80MHz if you use 802.11ac; select 40MHz if you use 802.11n; otherwise, 20MHz for the 802.11a mode.
Control Sideband	It is only valid when you choose channel width 40MHz.
Channel Number	Indicates the channel setting for the AP.

Step 4: Wireless 5GHz Security Settings

Secure your wireless network by turning on the WPA or WEP security feature on the router. For this section you can set **WEP** and **WPA-PSK** security mode.

Figure 5-8 Wizard – Wireless 5GHz Security Setup

■ Encryption: WEP

The following picture shows how to set the WEP security.

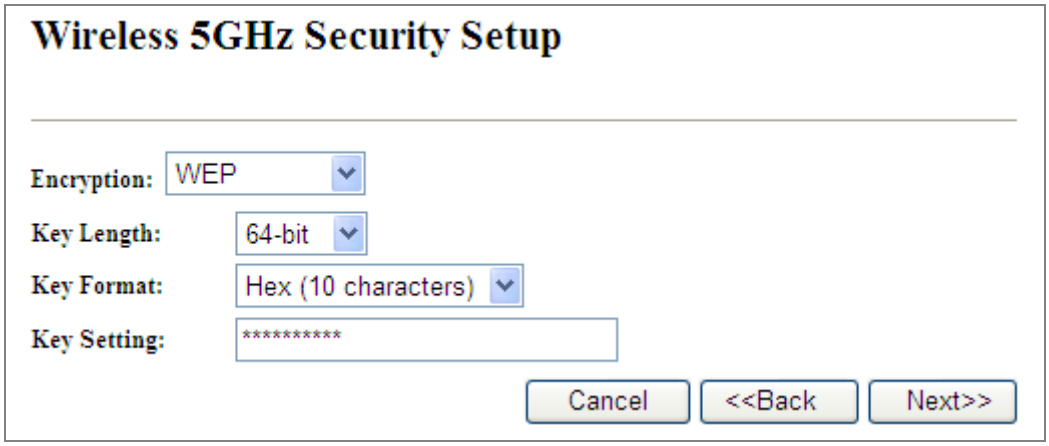


Figure 5-9 5GHz Wireless Security Setup – WEP Setting

The page includes the following fields:

Object	Description
Key length	WEP supports 64-bit or 128-bit security key.
Key Format	User can enter key in ASCII or Hex format.
Key Setting	Enter the key whose format is limited by the Key format, ASCII or Hex.

■ Encryption: WPA-PSK

The following picture shows how to set up **WPA-PSK** security. You can select **WPA (TKIP)**, **WPA2 (AES)** and **Mixed mode**.

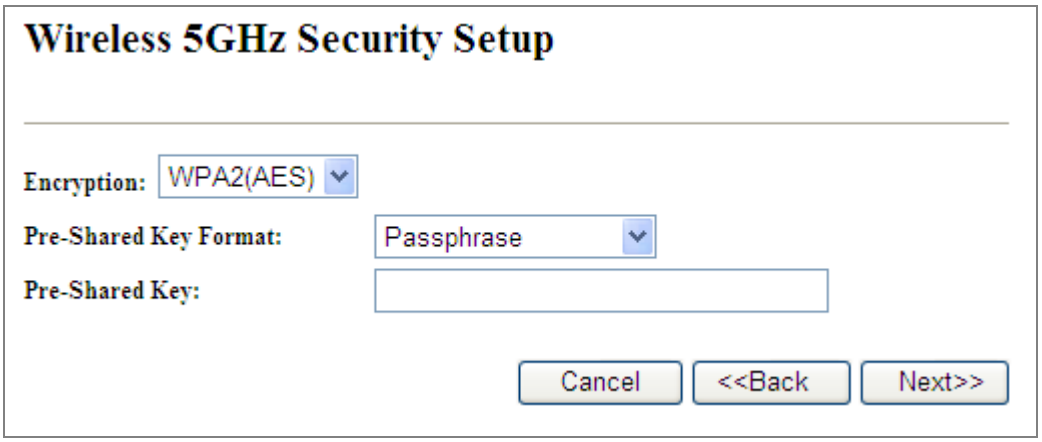


Figure 5-10 5GHz Wireless Security Setup – WPA Setting

The page includes the following fields:

Object	Description
Pre-Shared Key Format	Specify the format of the key, pass phrase or hex.
Pre-Shared Key	Enter the key whose format is limited by the key format.

Step 5: Wireless 2.4GHz Basic Settings

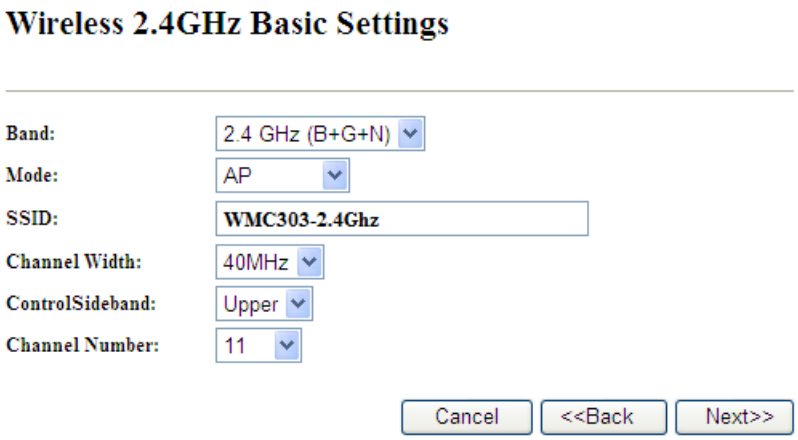


Figure 5-11 Wizard – Wireless 2.4GHz Basic Settings

The page includes the following fields:

Object	Description
Band	Supports 802.11b, 802.11g, 802.11n and mixed. Please choose its band according to your clients.
Mode	Supports AP, Client, WDS and AP+WDS mode.
SSID	Service Set Identifier, it identifies your wireless network.
Channel Width	Select 40MHz if you use 802.11n, otherwise 20MHz for the 802.11b/g mode.
Control Sideband	It is only valid when you choose channel width 40MHz.
Channel Number	Indicates the channel setting for the AP.

Step 6: Wireless 2.4GHz Security Settings

Secure your wireless network by turning on the WPA or WEP security feature on the router. For this section you can set **WEP** and **WPA-PSK** security mode.

Figure 5-12 Wizard – Wireless 2.4GHz Security Setup

■ Encryption: WEP

The following picture shows how to set the WEP security.

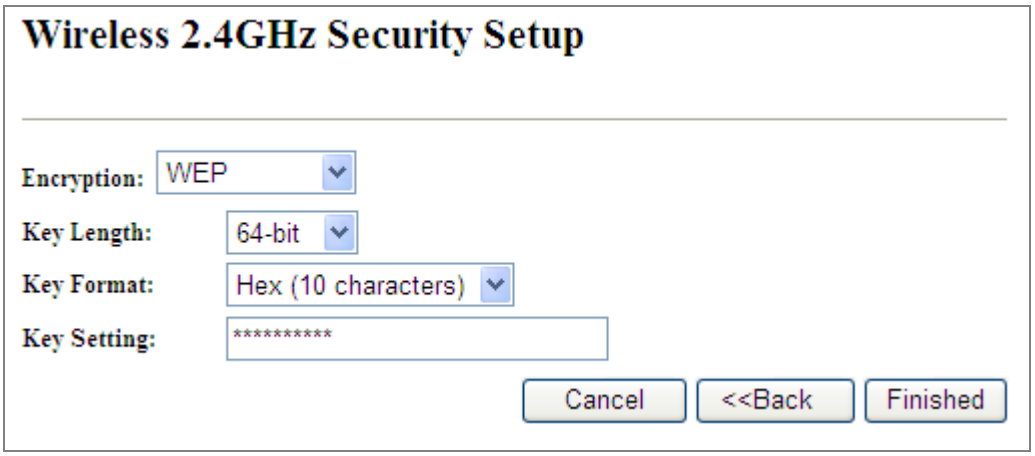


Figure 5-13 2.4GHz Wireless Security Setup – WEP Setting

The page includes the following fields:

Object	Description
Key Length	WEP supports 64-bit or 128-bit security key.
Key Format	User can enter key in ASCII or Hex format.
Key Setting	Enter the key whose format is limited by the Key format, ASCII or Hex.

■ Encryption: WPA-PSK

The following picture shows how to set **WPA-PSK** security. You can select **WPA (TKIP)**, **WPA2 (AES)** and **Mixed mode**.

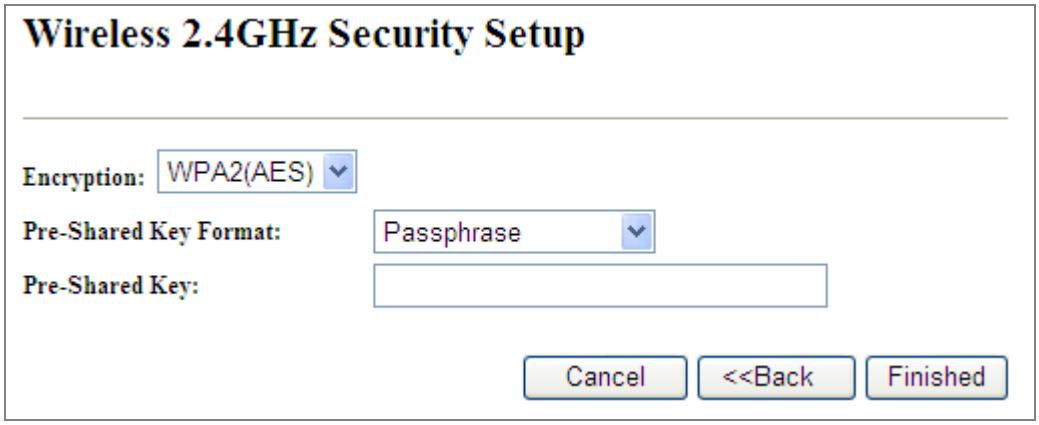


Figure 5-14 2.4GHz Wireless Security Setup – WPA Setting

The page includes the following fields:

Object	Description
Pre-Shared Key Format	Specify the format of the key, pass phrase or hex.
Pre-Shared Key	Enter the key whose format is limited by the key format.

Click the **Finished** button to make your wireless configuration to take effect and finish the **Setup Wizard**.

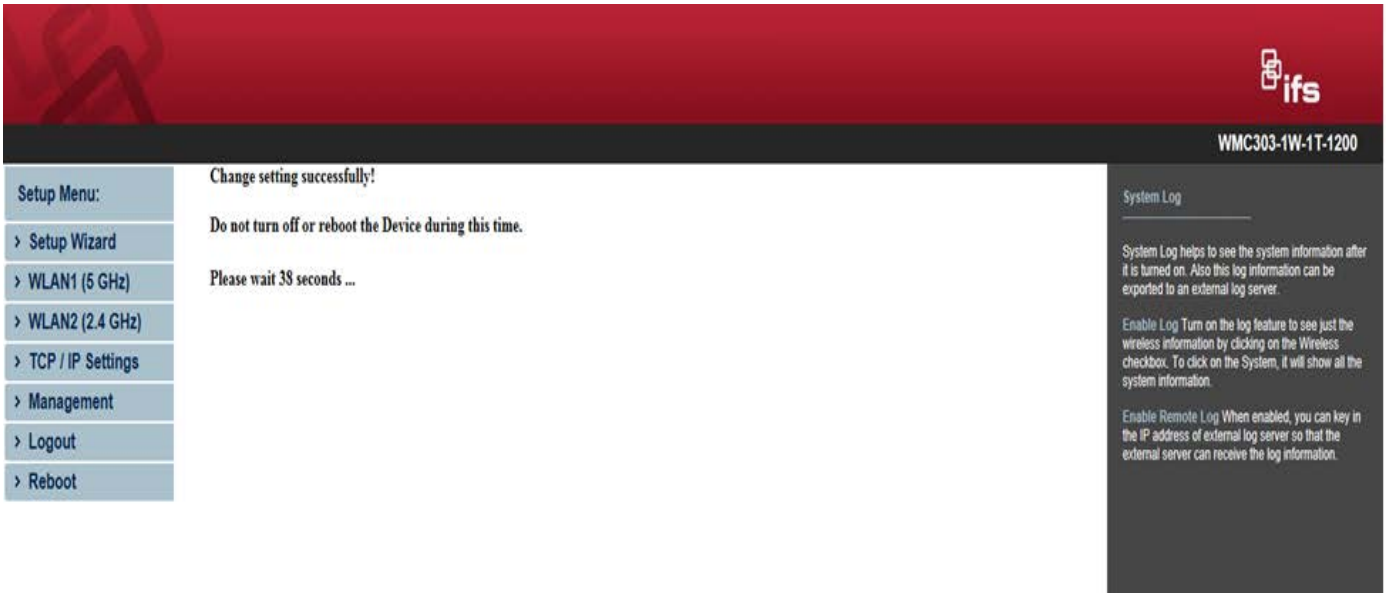

WMC303-1W-1T-1200
Setup Menu:
› Setup Wizard
› WLAN1 (5 GHz)
› WLAN2 (2.4 GHz)
› TCP / IP Settings
› Management
› Logout
› Reboot
Change setting successfully!
Do not turn off or reboot the Device during this time.
Please wait 38 seconds ...
System Log
System Log helps to see the system information after it is turned on. Also this log information can be exported to an external log server.
Enable Log Turn on the log feature to see just the wireless information by clicking on the Wireless checkbox. To click on the System, it will show all the system information.
Enable Remote Log When enabled, you can key in the IP address of external log server so that the external server can receive the log information.

Figure 5-15 Setup Wizard - Finished

After rebooting, please check whether you can access the Internet or not on the "**Status**" page.

5.2 TCP / IP Settings

This page is used to configure the parameters for local area network which connects to the LAN port of your AP. Here you may change the setting for IP address, subnet mask, DHCP, etc.

5.2.1 LAN Settings

On the LAN Settings page, you can configure the IP parameters of the LAN on the screen as shown below.

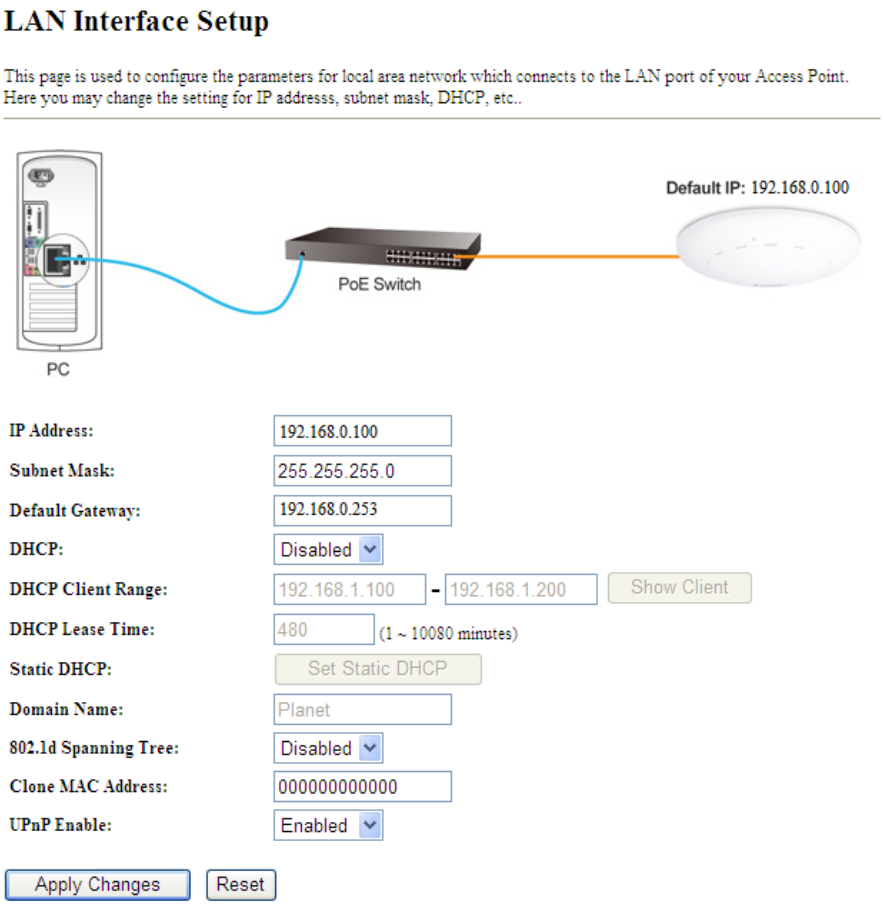

LAN Interface Setup
This page is used to configure the parameters for local area network which connects to the LAN port of your Access Point. Here you may change the setting for IP addresss, subnet mask, DHCP, etc..
Default IP: 192.168.0.100
PoE Switch
PC
IP Address: 192.168.0.100
Subnet Mask: 255.255.255.0
Default Gateway: 192.168.0.253
DHCP: Disabled
DHCP Client Range: 192.168.1.100 - 192.168.1.200 Show Client
DHCP Lease Time: 480 (1 ~ 10080 minutes)
Static DHCP: Set Static DHCP
Domain Name: Planet
802.1d Spanning Tree: Disabled
Clone MAC Address: 000000000000
UPnP Enable: Enabled
Apply Changes
Reset

Figure 5-16 LAN Setting

The page includes the following fields:

Object	Description
IP Address	The default LAN IP address of the WMC303-1W-1T-1200 is **192.168.0.100**. You can change it according to your request.
Subnet Mask	Default is **255.255.255.0**. You can change it according to your request.
Default Gateway	Default is **192.168.0.253**. You can change it according to your request.
DHCP	You can select a **Disabled**, **Client**, **and Server**. Default is **Disabled**, meaning the WMC303-1200 must connect to a router to assign IP addresses to clients.
DHCP Client Range	For the **Server** mode, you must enter the DHCP client IP address range in the field. And you can click the "**Show Client**" button to show

	the Active DHCP Client Table.
Static DHCP	Click the "**Set Static DHCP**" button and you can reserve some IP addresses for those network devices with the specified MAC addresses anytime when they request IP addresses.
Domain Name	Default is **IFS**.
802.1d Spanning Tree	You can enable or disable the Spanning Tree function.
Clone MAC Address	You can input an MAC address here for using clone function.
UPnP Enable	You can enable or disable the UPnP function. The UPnP feature allows the devices, such as Internet computers, to access the local host resources or devices as needed. UPnP devices can be automatically discovered by the UPnP service application on the LAN.

If you change the IP address of LAN, you must use the new IP address to login the AP.

When the IP address of the WMC303-1200 is changed, the clients on the network often need to wait for a while or even reboot before they can access the new IP address. For an immediate access to the AP, please flush the netbios cache on the client computer by running the "nbtstat –r" command before using the device name of the WMC303-1200 to access its Web Management page.

5.3 WLAN1 (5GHz)

The wireless menu of WLAN1 (5GHz) contains submenus of the settings about wireless network. Please refer to the following sections for the details.

Figure 5-17 5GHz Wireless Main Menu

5.3.1 Basic Settings

Choose menu "**WLAN1 (5GHz) → Basic Settings**" and you can configure the 5GHz basic settings for the wireless network on this page. After the configuration is done, please click the "Apply Changes" button to save the settings.

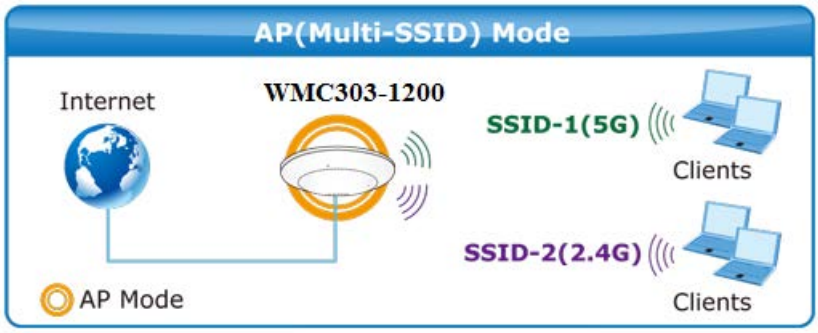
First of all, the wireless AP supports multiple wireless modes for different network applications, which include:

- **AP**
- **Multiple SSIDs**
- **Universal Repeater**
- **Client**
- **WDS**
- **AP+WDS**

It is so easy to combine the WMC303-1W-1T-1200 with the existing wired network. The WMC303-1W-1T-1200 definitely provides a total network solution for the home and the SOHO users.

■ **AP**

Standard **Access Point**



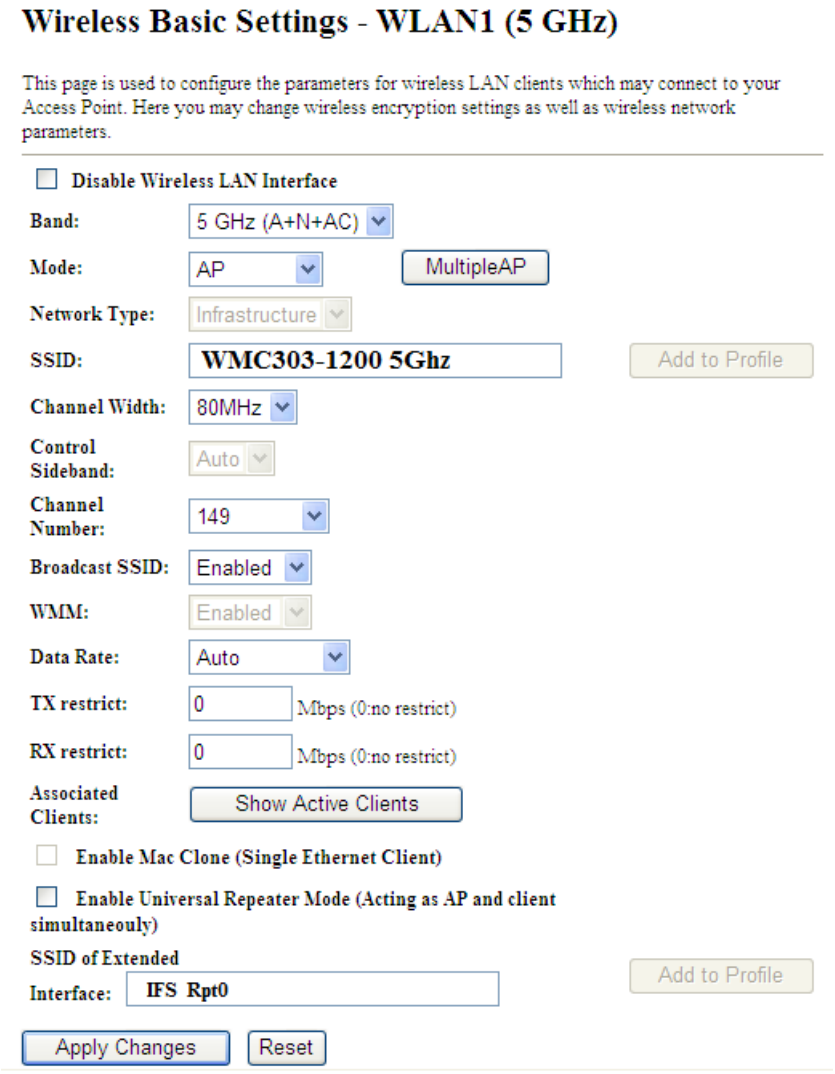

Wireless Basic Settings - WLAN1 (5 GHz)
This page is used to configure the parameters for wireless LAN clients which may connect to your Access Point. Here you may change wireless encryption settings as well as wireless network parameters.
Disable Wireless LAN Interface
Band: 5 GHz (A+N+AC)
Mode: AP
MultipleAP
Network Type: Infrastructure
SSID: WMC303-1200 5Ghz
Add to Profile
Channel Width: 80MHz
Control Sideband: Auto
Channel Number: 149
Broadcast SSID: Enabled
WMM: Enabled
Data Rate: Auto
TX restrict: 0 Mbps (0:no restrict)
RX restrict: 0 Mbps (0:no restrict)
Associated Clients: Show Active Clients
Enable Mac Clone (Single Ethernet Client)
Enable Universal Repeater Mode (Acting as AP and client simultaneouly)
SSID of Extended Interface: IFS Rpt0
Add to Profile
Apply Changes
Reset

Figure 5-18 5GHz Wireless Basic Settings of AP

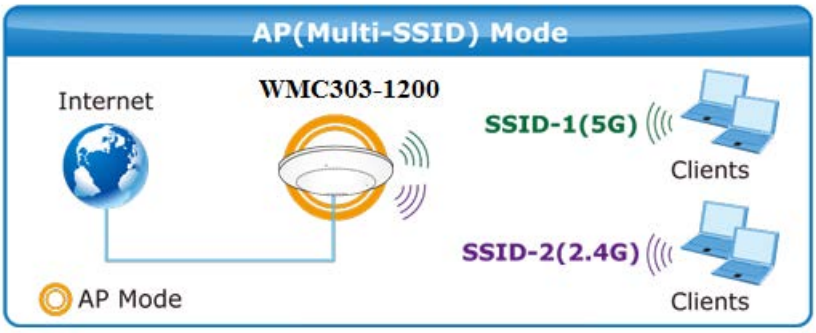
The page includes the following fields:

Object	Description
Disable Wireless LAN Interface	Check the box to disable the wireless function.
Band	Select the desired mode. Default is "**5GHz (A+N+AC)**". It is strongly recommended that you set the Band to "**5GHz (A+N+AC)**", and all of 802.11a, 802.11n, and 802.11ac wireless stations can connect to the WMC303-1W-1T-1200. ■ **5 GHz (A)**: 802.11a mode, rate is up to 54Mbps ■ **5 GHz (N)**: 802.11n mode, rate is up to 300Mbps ■ **5 GHz (AC)**: 802.11n mode, rate is up to 867Mbps(2T2R) ■ **5 GHz (A+N)**: 802.11a/n mode, rate is up to 300Mbps ■ **5 GHz (N+AC)**: 802.11n/ac mode, rate is up to 300Mbps or 867Mbps ■ **5 GHz (A+N+AC)**: 802.11a/n/ac mode, rate is up to 54Mbps, 300Mbps, or 867Mbps
Mode	There are four kinds of wireless mode selections: ■ **AP** ■ **Client** ■ **WDS** ■ **AP+WDS** If you select WDS or AP+WDS, please click "**WDS Settings**" submenu for the related configuration. Furthermore, click the "**Multiple AP"** button to enable multiple SSID functions.
SSID	The ID of the wireless network. User can access the wireless network through it only. However, if you switch to Client Mode, this field becomes the SSID of the AP you want to connect with. Default: **IFS AP 5G**
Channel Width	You can select **20MHz**, **40MHz** or **80MHz**.
Channel Number	You can select the operating frequency of wireless network. Default: **40**
Broadcast SSID	If you enable "Broadcast SSID", every wireless station located within the coverage of the AP can discover its signal easily. If you are building a public wireless network, enabling this feature is recommended. In private network, disabling "Broadcast SSID" can provide better wireless network security. Default is "**Enabled**".
Data Rate	Set the wireless data transfer rate to a certain value. Since most of wireless devices will negotiate with each other and pick a proper data

	transfer rate automatically, **it's not necessary to change this value unless you know what will happen after modification.** Default is "**Auto"**.
Associated Clients	Click the "**Show Active Clients**" button to show the status table of active wireless clients.
Enable Universal Repeater Mode **(Acting as AP and client simultaneously)**	Universal Repeater is a technology used to extend wireless coverage. To enable Universal Repeater Mode, check the box and enter the SSID you want to broadcast in the field below. Then please click "Security" submenu for the related settings of the AP you want to connect with.

■ Multiple-SSID

Enable multiple-SSID can broadcast multiple WLAN SSID's using virtual interfaces. You can have different encryption settings for each WLAN and you can restrict what they have access to.



Choose menu "**WLAN1 (5GHz)** → **Basic Settings** → **Multiple AP**" to configure the device as a general wireless access point with multiple SSIDs.

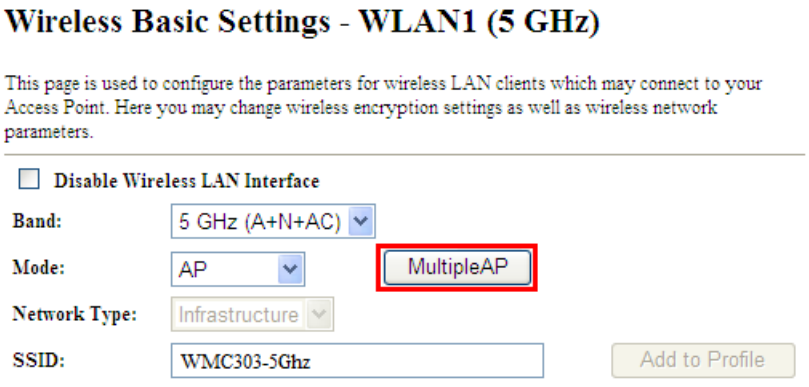

Wireless Basic Settings - WLAN1 (5 GHz)
This page is used to configure the parameters for wireless LAN clients which may connect to your Access Point. Here you may change wireless encryption settings as well as wireless network parameters.
Disable Wireless LAN Interface
Band:
5 GHz (A+N+AC)
Mode:
AP
MultipleAP
Network Type:
Infrastructure
SSID:
WMC303-5Ghz
Add to Profile

Figure 5-19 5GHz Wireless Basic Settings – Multiple AP

The device supports up to four multiple Service Set Identifiers. You can back to the **Basic Settings** page to set the Primary SSID. The SSID's factory default setting is **IFS 5G VAP1~4 (Multiple-SSID 1~4)**. The SSID can be easily changed to connect to an existing wireless network or to establish a new wireless network.

When the information for the new SSID is finished, click the **Apply Changes** button to let your changes take effect.

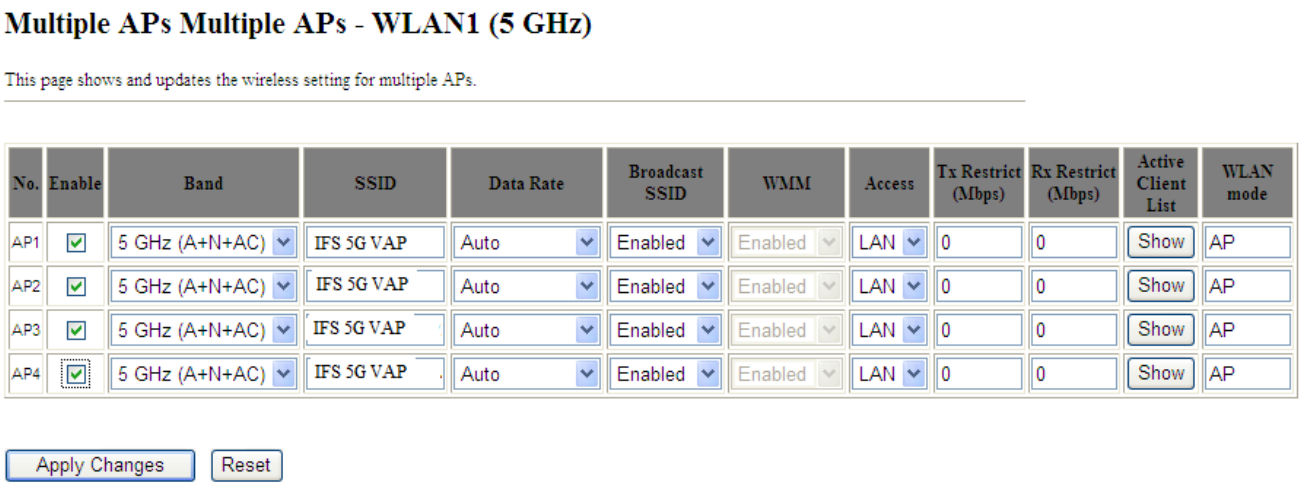
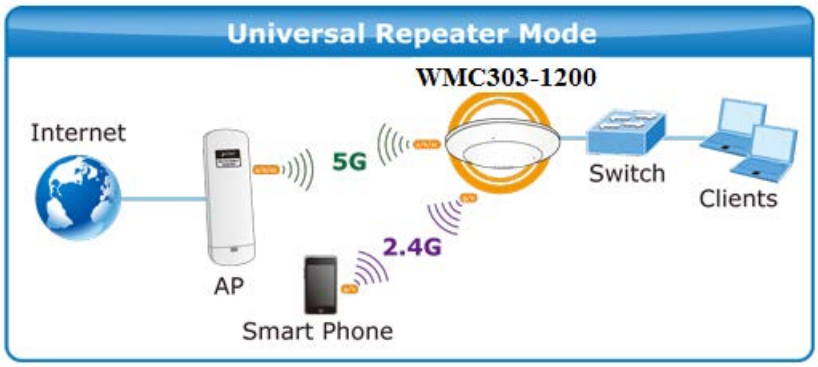

Multiple APs Multiple APs - WLAN1 (5 GHz)
This page shows and updates the wireless setting for multiple APs.
No. Enable Band SSID Data Rate Broadcast SSID WMM Access Tx Restrict (Mbps) Rx Restrict (Mbps) Active Client List WLAN mode
AP1 5 GHz (A+N+AC) IFS 5G VAP Auto Enabled Enabled LAN 0 0 Show AP
AP2 5 GHz (A+N+AC) IFS 5G VAP Auto Enabled Enabled LAN 0 0 Show AP
AP3 5 GHz (A+N+AC) IFS 5G VAP Auto Enabled Enabled LAN 0 0 Show AP
AP4 5 GHz (A+N+AC) IFS 5G VAP Auto Enabled Enabled LAN 0 0 Show AP
Apply Changes
Reset

Figure 5-20 5GHz Multiple-SSID

Once you have applied and saved those settings, you can then go to the "**WLAN1 (5GHz)** → **Security**" page on the AP to set up security settings for each of the SSIDs.

■ Universal Repeater

This mode allows the AP with its own BSS to relay data to a root AP to which it is associated with WDS disabled. The wireless repeater relays signal between its stations and the root AP for greater wireless range.



1. Example of how to configure **Universal Repeater Mode**. Please take the following steps:

To configure each wireless parameter, please go to the "**WLAN1 (5GHz)** → **Basic Settings**" page.

Step 1. Configure wireless mode to "**AP**" and then check "**Enable Universal Repeater Mode (Acting as AP and client simultaneously)**". Click "**Apply Changes**" to take effect.

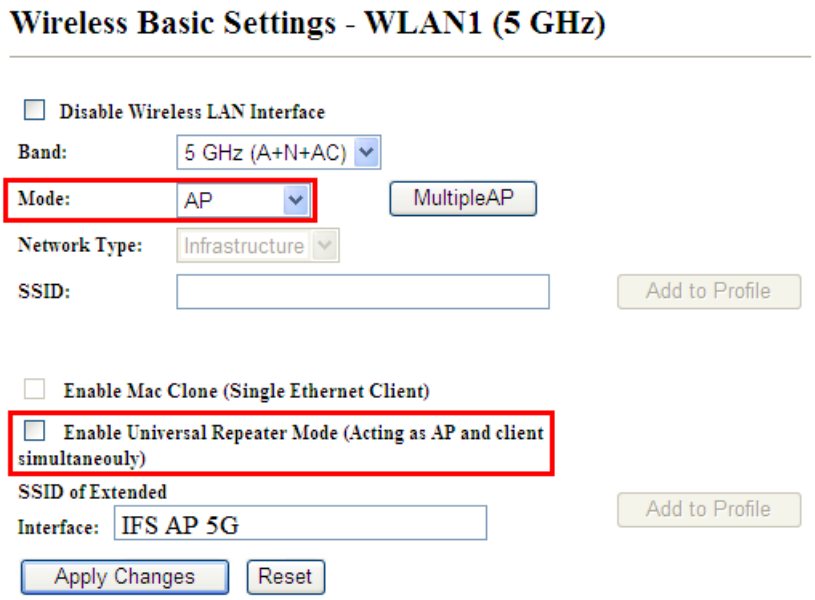


Figure 5-21 5GHz Universal Repeater-1

Step 2. Go to **5GHz Site Survey** page to find the root AP. Select the root AP that you want to repeat the signal and then click "**Next**".

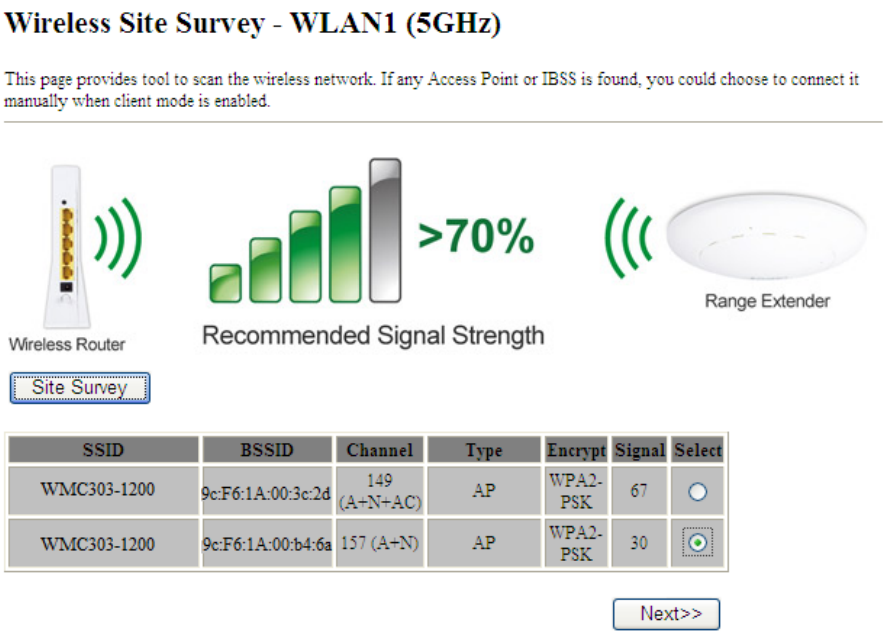


Figure 5-22 5GHz Universal Repeater-2

Step 3. Select the correct encryption method and enter the security key. Then, click "**Connect**".

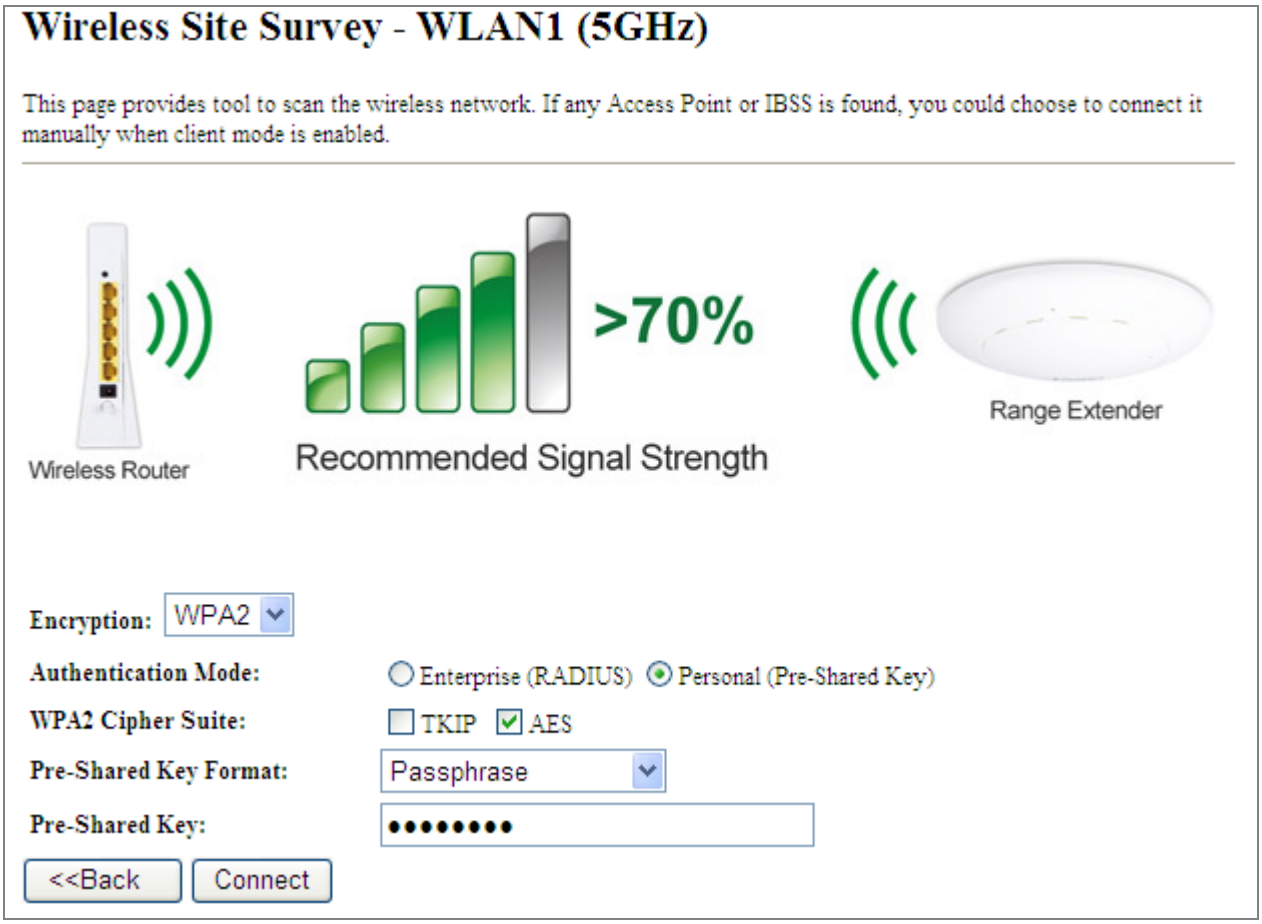

Wireless Site Survey - WLAN1 (5GHz)
This page provides tool to scan the wireless network. If any Access Point or IBSS is found, you could choose to connect it manually when client mode is enabled.
Wireless Router
>70%
Recommended Signal Strength
Range Extender
Encryption: WPA2
Authentication Mode: Enterprise (RADIUS) Personal (Pre-Shared Key)
WPA2 Cipher Suite: TKIP AES
Pre-Shared Key Format: Passphrase
Pre-Shared Key: ••••••••
<<Back
Connect

Figure 5-23 5GHz Universal Repeater-3

Step 4. Check "**Add to Wireless Profile**" and click "**Reboot Now**".

Figure 5-24 5GHz Universal Repeater-4

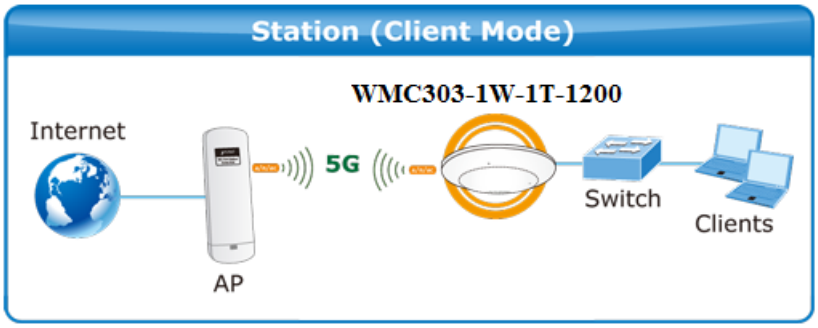
Step 5. Go to "**Management-> Status**" page to check whether the state of Repeater interface should be "**Connected**".

Wireless 1 Repeater Interface Configuration	
Mode	Infrastructure Client
SSID	WMC303-5G
Encryption	WPA2
BSSID	9c:F6:1A:00:b4:6a
State	Connected

Figure 5-25 5GHz Universal Repeater-5

■ Client (Infrastructure)

Combine the Wireless Router to the Ethernet devices such as TV, game player, or HDD and DVD, to make them be wireless stations.



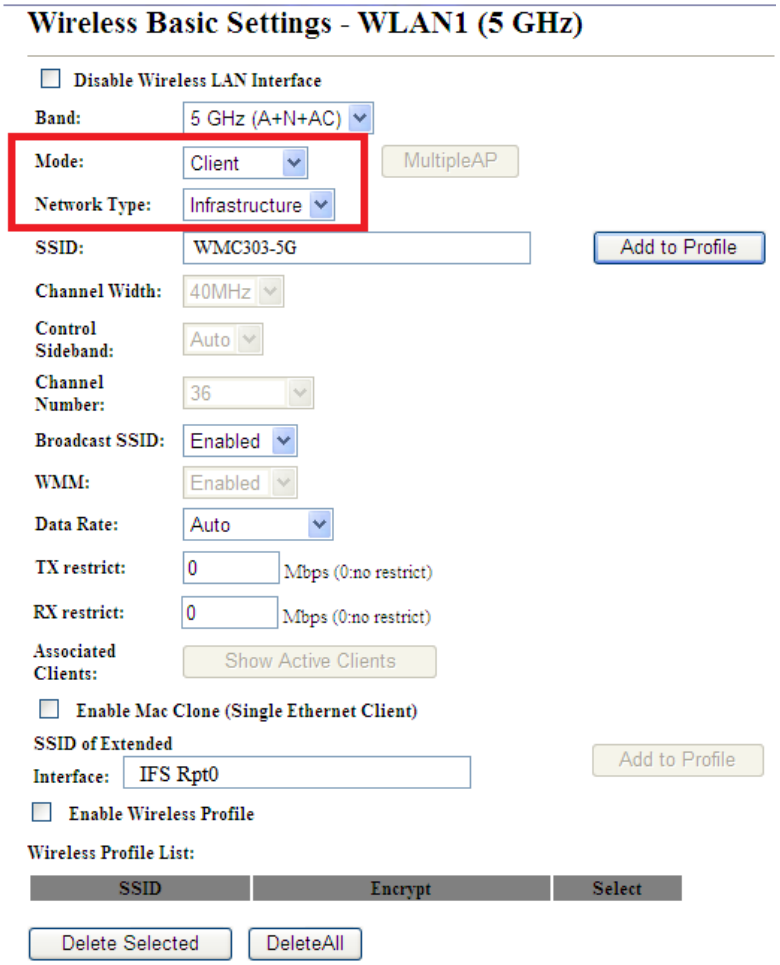


Figure 5-26 5GHz Wireless Basic Settings – Client

The page includes the following fields:

Object	Description
Disable Wireless LAN Interface	Check the box to disable the wireless function.
Band	Select the desired mode. Default is "**5GHz (A+N+AC)**". It is strongly recommended that you set the Band to "**5GHz (A+N+AC)**", and all of 802.11a, 802.11n, and 802.11ac wireless stations can connect to the WMC303-1200. ■ **5 GHz (A)**: 802.11a mode, rate is up to 54Mbps ■ **5 GHz (N)**: 802.11n mode, rate is up to 300Mbps ■ **5 GHz (AC)**: 802.11n mode, rate is up to 867Mbps(2T2R) ■ **5 GHz (A+N)**: 802.11a/n mode, rate is up to 300Mbps ■ **5 GHz (N+AC)**: 802.11n/ac mode, rate is up to 300Mbps or 867Mbps ■ **5 GHz (A+N+AC)**: 802.11a/n/ac mode, rate is up to 54Mbps, 300Mbps, or 867Mbps
Mode	There are four kinds of wireless mode selections: ■ **AP** ■ **Client** ■ **WDS** ■ **AP+WDS** If you select WDS or AP+WDS, please click "**WDS Settings**" submenu for the related configuration. Furthermore, click the "**Multiple AP"** button to enable multiple SSID function.
Network Type	In **Infrastructure**, the wireless LAN serves as a wireless station. And the user can use the PC equipped with the WMC303-1200 to access the wireless network via other access points. In **Ad hoc**, the wireless LAN will use the Ad-hoc mode to operate. Default is "**Infrastructure**". Note: Only while the wireless mode is set to "**Client**", then the **Network Type** can be configured.
SSID	The ID of the wireless network. User can access the wireless network via its ID. However, if you switch to Client mode, this field becomes the SSID of the AP you want to connect with. Default: **WMC303 5G**
Broadcast SSID	If you enable "Broadcast SSID", every wireless station located within the coverage of the WMC303-1200 can discover its signal easily. If you are building a public wireless network, enabling this feature is recommended. In private network, disabling "Broadcast SSID" can provide better wireless network security.

	Default is “**Enabled**”.
Data Rate	Set the wireless data transfer rate to a certain value. Since most of wireless devices will negotiate with each other and pick a proper data transfer rate automatically, **it’s not necessary to change this value unless you know what will happen after modification.** Default is “**Auto”**.
Enable Mac Clone (Single Ethernet Client)	Enable Mac Clone.

➢ Example of how to configure **Client Mode**. Please take the following steps:

To configure each wireless parameter, please go to the “**WLAN1 (5GHz)** → **Basic Settings**” page.

Step 1. Go to “**WLAN1 (5GHz)** → **Site Survey**” page and click “**Site Survey**” button.

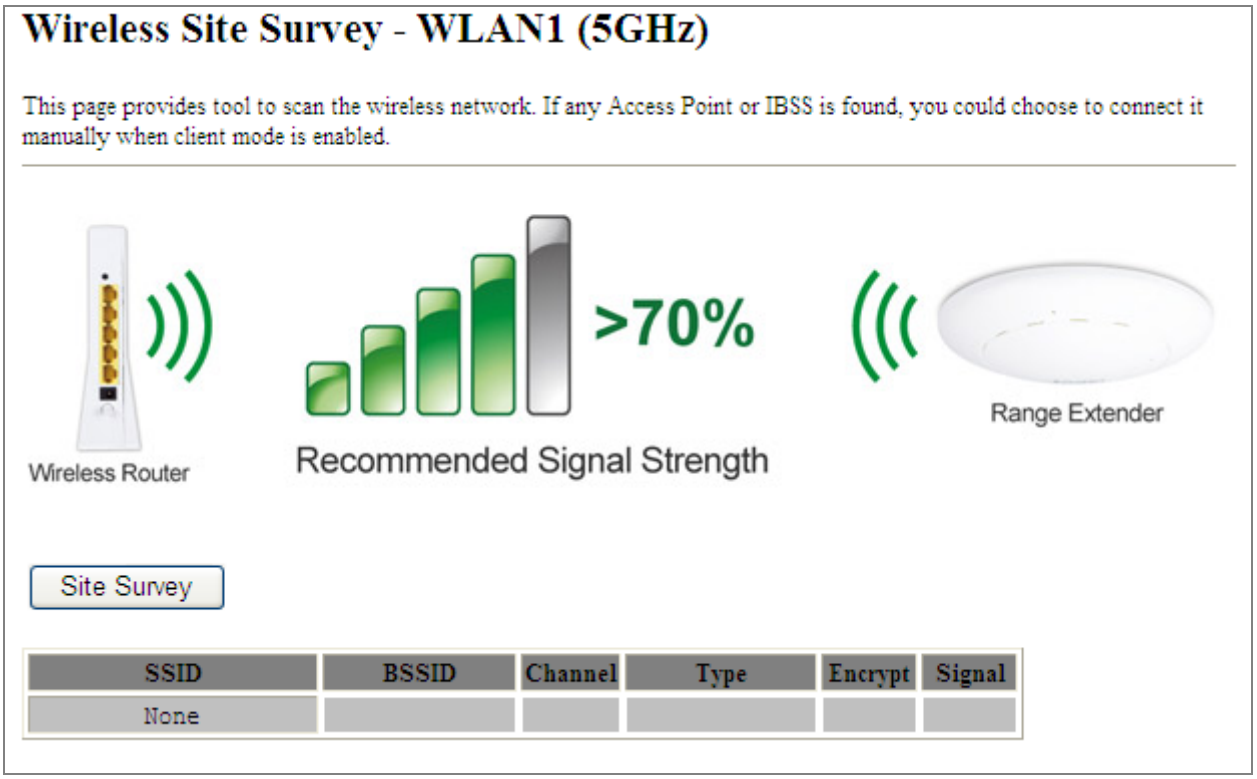


Figure 5-27 Client – Survey

Step 2. Choose the root AP from the list. If the root AP is not listed in the table, re-click “**Site Survey**” to update the list.

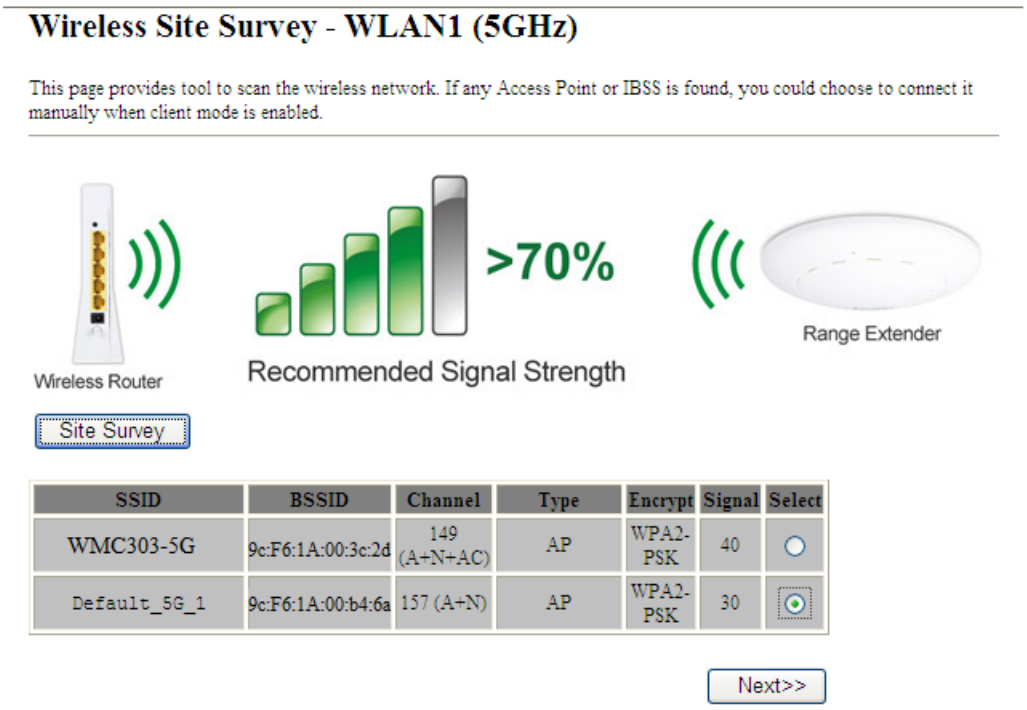


Figure 5-28 Client – AP List

Step 3. Enter the Security Key of the root AP and then click "**Connect**".

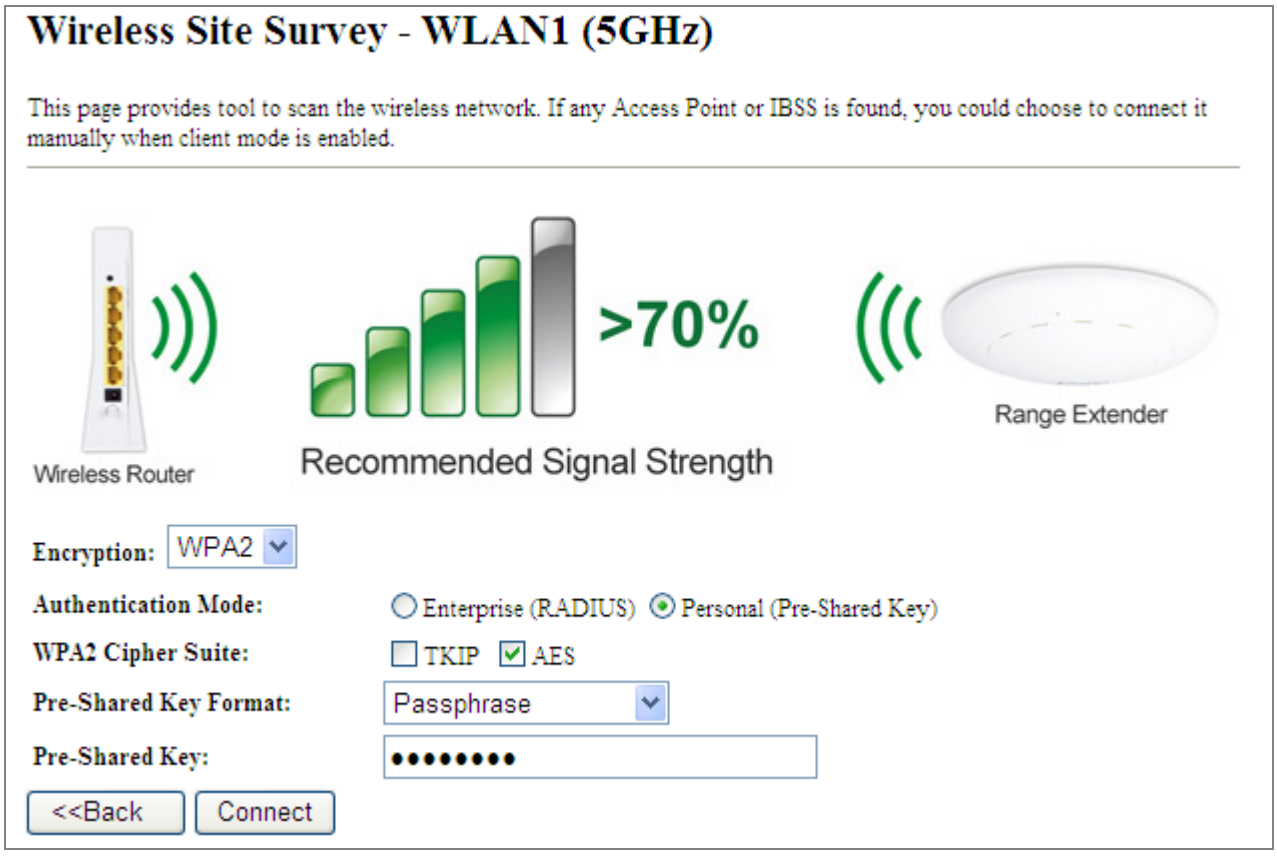

Wireless Site Survey - WLAN1 (5GHz)
This page provides tool to scan the wireless network. If any Access Point or IBSS is found, you could choose to connect it manually when client mode is enabled.
Wireless Router
>70%
Recommended Signal Strength
Range Extender
Encryption: WPA2
Authentication Mode: Enterprise (RADIUS) Personal (Pre-Shared Key)
WPA2 Cipher Suite: TKIP AES
Pre-Shared Key Format: Passphrase
Pre-Shared Key: ••••••••
<<Back
Connect

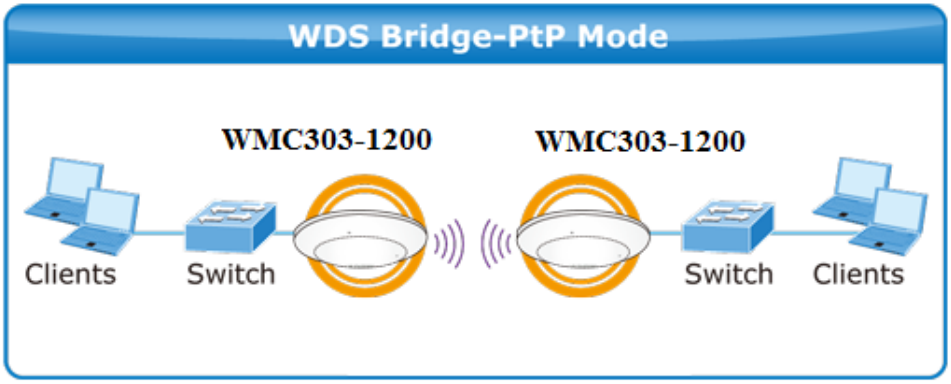
Figure 5-29 Client – Security

Step 4. Wait until the connection established. Check the "**Add to Wireless Profile**" option and then reboot it.

Figure 5-30 Client – Status

■ WDS

Connect this Wireless AP with up to 8 WDS-capable wireless APs to expand the scope of network.



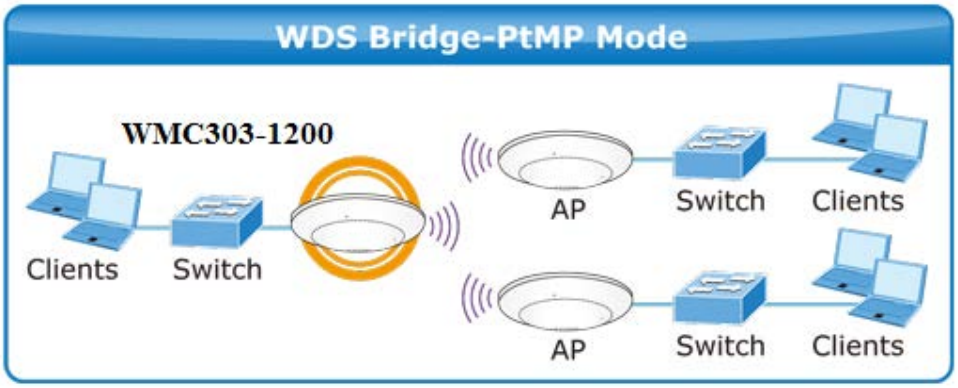


Figure 5-31 5GHz Wireless Basic Settings – WDS

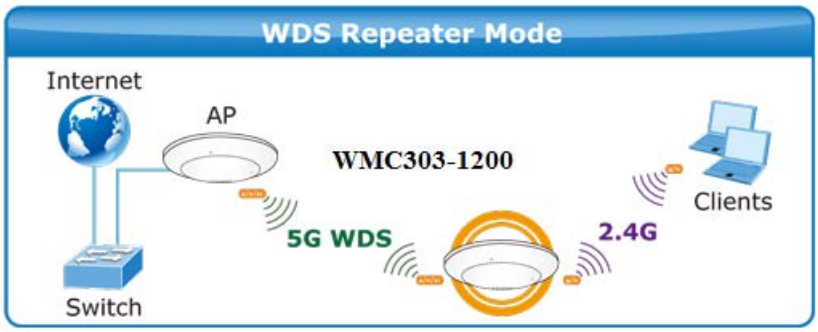
The page includes the following fields:

Object	Description
Disable Wireless LAN Interface	Check the box to disable the wireless function.
Band	Select the desired mode. Default is "**5GHz (A+N+AC)**". It is strongly recommended that you set the Band to "**5GHz (A+N+AC)**", and all of 802.11a, 802.11n, and 802.11ac wireless stations can connect to the WMC303-1200. ■ **5 GHz (A)**: 802.11a mode, rate is up to 54Mbps ■ **5 GHz (N)**: 802.11n mode, rate is up to 300Mbps ■ **5 GHz (AC)**: 802.11n mode, rate is up to 867Mbps(2T2R) ■ **5 GHz (A+N)**: 802.11a/n mode, rate is up to 300Mbps ■ **5 GHz (N+AC)**: 802.11n/ac mode, rate is up to 300Mbps or

	867Mbps ■ **5 GHz (A+N+AC)**: 802.11a/n/ac mode, rate is up to 54Mbps, 300Mbps, or 867Mbps
Mode	There are four kinds of wireless mode selections: ■ **AP** ■ **Client** ■ **WDS** ■ **AP+WDS** If you select WDS or AP+WDS, please click "**WDS Settings**" submenu for the related configuration. Furthermore, click the "**Multiple AP"** button to enable multiple SSID function.
Channel Width	You can select **20MHz**, **40MHz** or **80MHz**.
Control Sideband	You can select **Upper** or **Lower**.
Channel Number	You can select the operating frequency of wireless network.
Data Rate	Set the wireless data transfer rate to a certain value. Since most of wireless devices will negotiate with each other and pick a proper data transfer rate automatically, **it's not necessary to change this value unless you know what will happen after modification.** Default is "**Auto"**.

■ AP+ WDS

Connect this wireless AP with up to 8 WDS-capable wireless APs, and connect another AP to provide service for all wireless stations within its coverage.



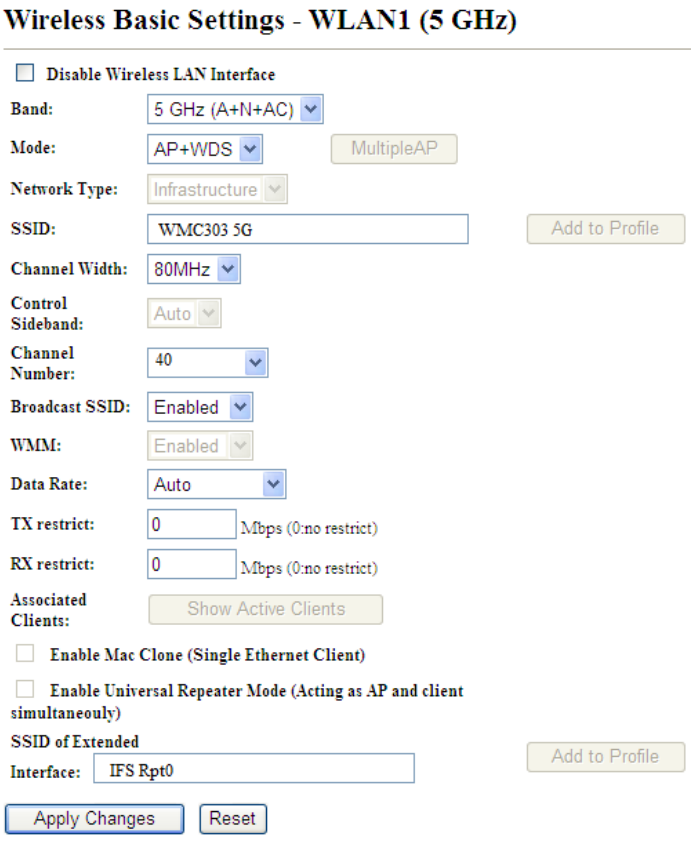

Wireless Basic Settings - WLAN1 (5 GHz)
Disable Wireless LAN Interface
Band: 5 GHz (A+N+AC)
Mode: AP+WDS MultipleAP
Network Type: Infrastructure
SSID: WMC303 5G Add to Profile
Channel Width: 80MHz
Control Sideband: Auto
Channel Number: 40
Broadcast SSID: Enabled
WMM: Enabled
Data Rate: Auto
TX restrict: 0 Mbps (0:no restrict)
RX restrict: 0 Mbps (0:no restrict)
Associated Clients: Show Active Clients
Enable Mac Clone (Single Ethernet Client)
Enable Universal Repeater Mode (Acting as AP and client simultaneouly)
SSID of Extended Interface: IFS Rpt0 Add to Profile
Apply Changes
Reset

Figure 5-32 5GHz Wireless Basic Settings – WDS+AP

The page includes the following fields:

Object	Description
Disable Wireless LAN Interface	Check the box to disable the wireless function.
Country	Select your region from the pull-down list. This field specifies the region where the wireless function of the Router can be used. It may be illegal to use the wireless function of the Router in a region other than one of those specified in this field. If your country or region is not listed, please contact your local government agency for assistance.
Band	Select the desired mode. Default is "**5GHz (A+N+AC)**". It is strongly recommended that you set the band to "**5GHz (A+N+AC)**", and all of 802.11a, 802.11n, and 802.11ac wireless stations can connect to the WMC303-1200. ■ **5 GHz (A)**: 802.11a mode, rate is up to 54Mbps ■ **5 GHz (N)**: 802.11n mode, rate is up to 300Mbps ■ **5 GHz (AC)**: 802.11n mode, rate is up to 867Mbps(2T2R) ■ **5 GHz (A+N)**: 802.11a/n mode, rate is up to 300Mbps ■ **5 GHz (N+AC)**: 802.11n/ac mode, rate is up to 300Mbps or 867Mbps ■ **5 GHz (A+N+AC)**: 802.11a/n/ac mode, rate is up to 54Mbps, 300Mbps, or 867Mbps
Mode	There are four kinds of wireless mode selections: ■ **AP** ■ **Client** ■ **WDS** ■ **AP+WDS** If you select WDS or AP+WDS, please click "**WDS Settings**" submenu for the related configuration. Furthermore, click the "**Multiple AP"** button to enable multiple SSID functions.
SSID	The ID of the wireless network. User can access the wireless network via its ID only. However, if you switch to Client Mode, this field becomes the SSID of the AP you want to connect with. Default: **WMC303 5G**
Channel Width	You can select **20MHz**, **40MHz** or **80MHz**.
Control Sideband	You can select **Upper** or **Lower**.
Channel Number	You can select the operating frequency of wireless network.
Broadcast SSID	If you enable "Broadcast SSID", every wireless station located within the coverage of the WMC303-1200 can discover its signal easily. If you are building a public wireless network, enabling this feature is

	recommended. In private network, disabling “Broadcast SSID” can provide better wireless network security. Default is “**Enabled**”.
Data Rate	Set the wireless data transfer rate to a certain value. Since most of wireless devices will negotiate with each other and pick a proper data transfer rate automatically, **it’s not necessary to change this value unless you know what will happen after modification.** Default is “**Auto”**.
Associated Clients	Click the “**Show Active Clients**” button to show the status table of active wireless clients.
Enable Universal Repeater Mode **(Acting as AP and client simultaneously)**	Universal Repeater is a technology used to extend wireless coverage. To enable Universal Repeater mode, check the box and enter the SSID you want to broadcast in the field below. Then please click “Security” submenu for the related settings of the AP you want to connect with.

5.3.2 Advanced Settings

Choose menu “**WLAN1 (5GHz)→ Advanced Settings**” and you can configure the 5GHz advanced settings for the wireless network on this page. After the configuration, please click the “Apply” button to save the settings.

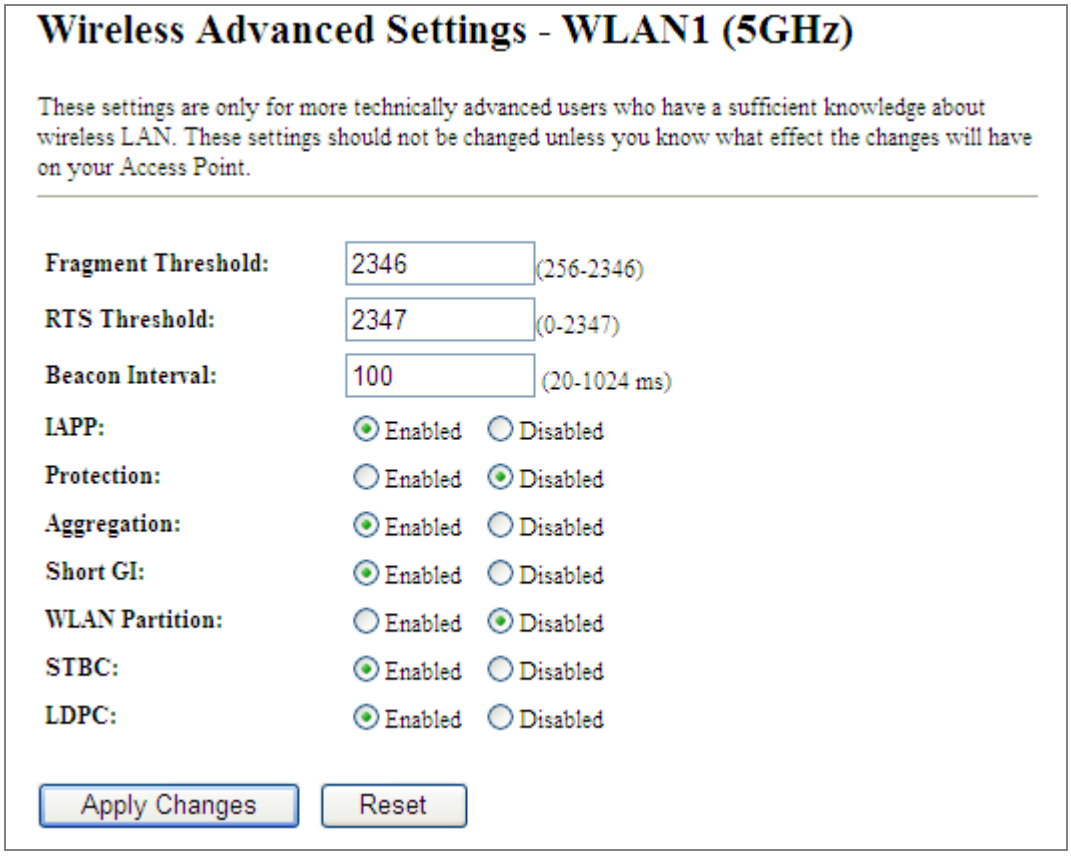

Wireless Advanced Settings - WLAN1 (5GHz)
These settings are only for more technically advanced users who have a sufficient knowledge about wireless LAN. These settings should not be changed unless you know what effect the changes will have on your Access Point.
Fragment Threshold: 2346 (256-2346)
RTS Threshold: 2347 (0-2347)
Beacon Interval: 100 (20-1024 ms)
IAPP: Enabled Disabled
Protection: Enabled Disabled
Aggregation: Enabled Disabled
Short GI: Enabled Disabled
WLAN Partition: Enabled Disabled
STBC: Enabled Disabled
LDPC: Enabled Disabled
Apply Changes
Reset

Figure 5-33 Wireless Advanced Settings – 5GHz

The page includes the following fields:

Object	Description
Fragment Threshold	You can specify the maximum size of packet during the fragmentation of data to be transmitted. If you set this value too low, it will result in bad performance. Default is “2346”.
RTS Threshold	When the packet size is smaller than the RTS threshold, the access point will not use the RTS/CTS mechanism to send this packet. Default is “2347”.
Beacon Interval	The interval of time that this access point broadcasts a beacon. Beacon is used to synchronize the wireless network. Default is “100”.
IAPP	**IAPP (Inter-Access Point Protocol)** enabled is recommended as it describes an optional extension to IEEE 802.11 that provides wireless access-point communications among multivendor systems. Default is “Enabled”.
Protection	It is recommended to enable the protection mechanism. This mechanism can decrease the rate of data collision between 802.11b and 802.11g wireless stations. When the protection mode is enabled, the throughput of the AP will be a little lower due to the transmission of heavy frame traffic. Default is “Disabled”.
Aggregation	It is a function where the values of multiple rows are grouped together. Default is “Enabled”
Short GI	It is used to set the time that the receiver waits for RF reflections to settle out before sampling data. Default is “Enabled”
WLAN Partition	This feature is also called “**WLAN isolation**” or “**Block Relay**”. If this is enabled, wireless clients cannot exchange data through the WMC303-1200. Default is “Disabled”.
STBC	Activate **Space Time Blocking Code (STBC)** which does not need channel statement information (CSI). Default Setting: "Enabled"
LDPC	Low-density Parity-check Code is wireless data transmit algorithm. Default Setting: "Enabled"

5.3.3 RF Output Power

Choose menu “**WLAN1 (5GHz) → RF Output Power**” to adjust to different levels of transmitting power for the wireless network according to various environments on this page. After the configuration, please click the “Apply Changes” button to save the settings.

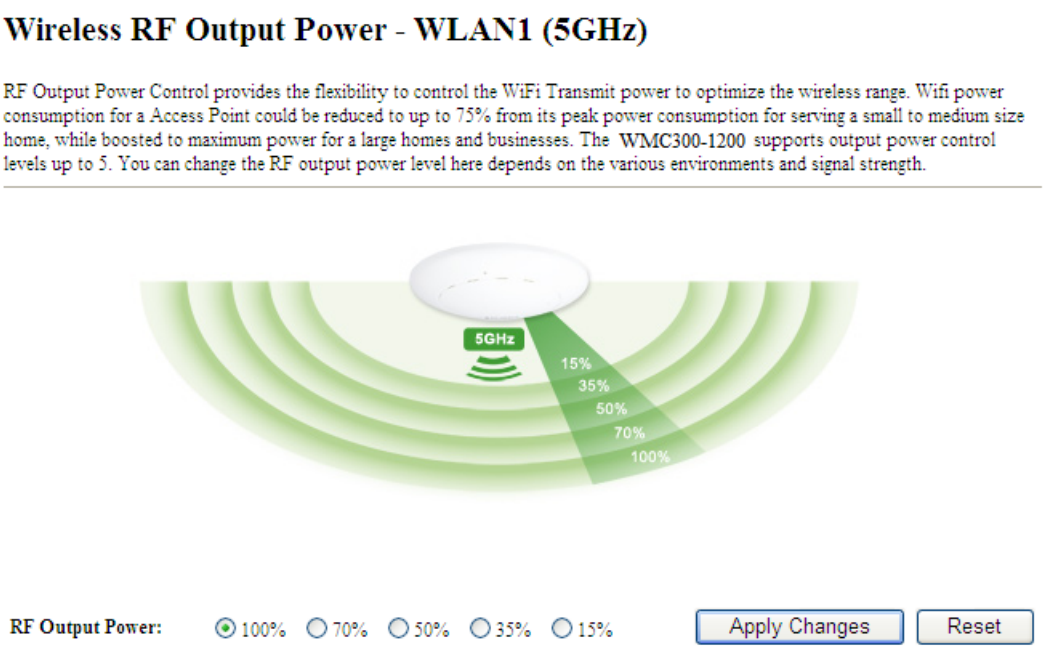

Wireless RF Output Power - WLAN1 (5GHz)
RF Output Power Control provides the flexibility to control the WiFi Transmit power to optimize the wireless range. Wifi power consumption for a Access Point could be reduced to up to 75% from its peak power consumption for serving a small to medium size home, while boosted to maximum power for a large homes and businesses. The WMC300-1200 supports output power control levels up to 5. You can change the RF output power level here depends on the various environments and signal strength.
5GHz
15%
35%
50%
70%
100%
RF Output Power:
100%
70%
50%
35%
15%
Apply Changes
Reset

Figure 5-34 RF Output Power – 5GHz

RF Output Power Control provides the flexibility to control the Wi-Fi transmit power to optimize the wireless range. Wi-Fi power consumption for an Access Point could be reduced to up to 75% from its peak power consumption for serving small to medium size homes, while boosted to maximum power for large homes and businesses. The WMC303-1200 supports output power control levels up to 5. You can change the RF output power level here in accordance with various environments and signal strength.

5.3.4 Security

Choose menu "**WLAN1 (5GHz) → Security**" and you can configure the settings of wireless security for the wireless network on this page. After the configuration, please click the "Apply Changes" button to save the settings.

Wireless Security Setup - WLAN1 (5GHz)
This page allows you setup the wireless security. Turn on WEP or WPA by using Encryption Keys could prevent any unauthorized access to your wireless network.
Select SSID:
Root AP - IFS AP 5G
Apply Changes
Reset
Wireless Router
Internet
5GHz
Home Network
5GHz Wi-Fi Network
Encryption:
Disable
802.1x Authentication:

Figure 5-35 Wireless Security Settings – 5GHz

The page includes the following fields:

Object	Description
Select SSID	Select the SSID you want to configure the wireless security function, which includes the root one and the client one.
Encryption	■ **Disable:** No security setup for wireless connection.
	■ **WEP:** It is based on the IEEE 802.11 standard. And the default setting of authentication is **Automatic**, which can select **Open System** or **Shared Key** authentication type automatically based on the wireless station's capability and request. Furthermore, you can select **Key Length** and enter 10 and 26 **Hexadecimal** digits (any combination of 0-9, a-f, A-F, zero key is not promoted) or 5 and 13 **ASCII** characters in the **Encryption Key** field.
	■ **WPA:** WPA is a medium level encryption and is supported by most wireless devices and operating systems.
	■ **WPA2:** WPA2 is a high level encryption and is supported by most wireless devices and operating systems.
	■ **WPA / WPA2 / WPA-Mixed:** WPA Mixed Mode allows the use of both WPA and WPA2 at the same time.
Authentication Mode	■ **Enterprise (RADIUS)** When you select the authentication mode based on Enterprise (Radius Server), please enter the **IP Address**, **Port**, and **Password** of the Radius Server.
	■ **Personal (Pre-Shared Key)** When you select the other authentication mode based on Personal (Pre-Shared Key), please enter at least 8 ASCII characters (Passphrase) or 64 Hexadecimal characters. All of the Cipher Suites support **TKIP** and **AES**.
802.1x Authentication	Enable 802.1x authentication function and then please enter the **IP Address**, **Port**, and **Password** of the Radius Server.

5.3.5 Access Control

Choose menu "**WLAN1 (5GHz) → Access Control**" to allow or deny the computer of specified MAC address to connect with the WMC303-1200 on this page. After the configuration, please click the "Apply Changes" button to save the settings.

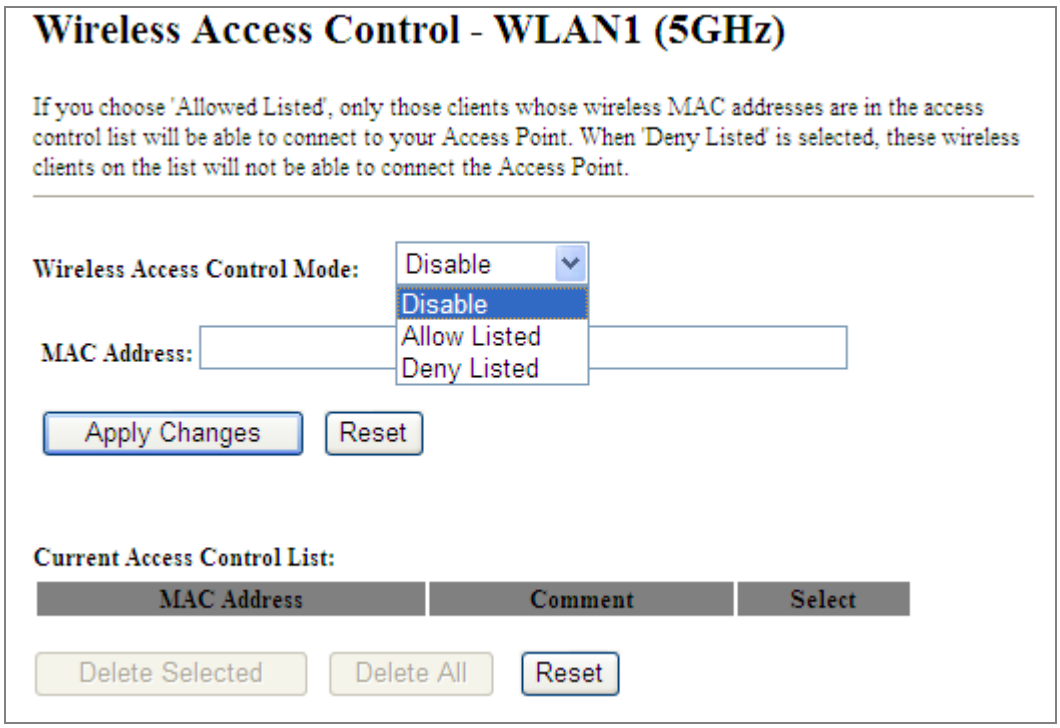

Wireless Access Control - WLAN1 (5GHz)
If you choose 'Allowed Listed', only those clients whose wireless MAC addresses are in the access control list will be able to connect to your Access Point. When 'Deny Listed' is selected, these wireless clients on the list will not be able to connect the Access Point.
Wireless Access Control Mode:
Disable
Disable
Allow Listed
Deny Listed
MAC Address:
Apply Changes
Reset
Current Access Control List:
MAC Address
Comment
Select
Delete Selected
Delete All
Reset

Figure 5-36 Wireless Access Control – 5GHz

The page includes the following fields:

Object	Description
Wireless Access Control Mode	You can choose to set the Allowed-List, Denied-List, or disable this function.
MAC Address	Enter the MAC address you want to allow or deny connection to the WMC303-1200 in the field.
Comment	You can make some comment on each MAC address on the list.
Current Access Control List	You can select some MAC addresses and click the “Delete Selected” button to delete it.

To deny a PC at the MAC address of 9c:F6:1A:00:00:01 (for example) to connect to your wireless network, do as follows:

Step 1. Select “**Deny**” from MAC Address Filter drop-down menu.

Step 2. Enter 9c:F6:1A:00:00:01 in the MAC address box and click “**Add**”.

Step 3. Click the “**OK**” button to save your settings and you can add more MAC addresses, if you like, simply repeat the above steps.

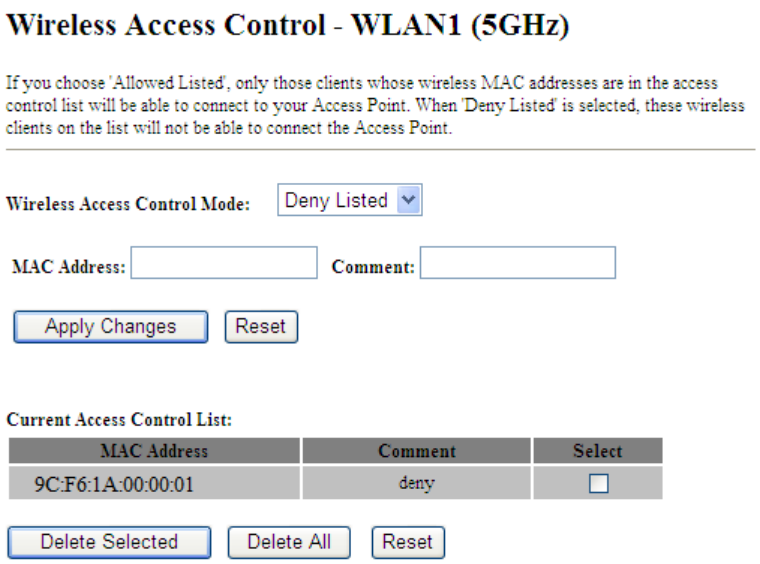
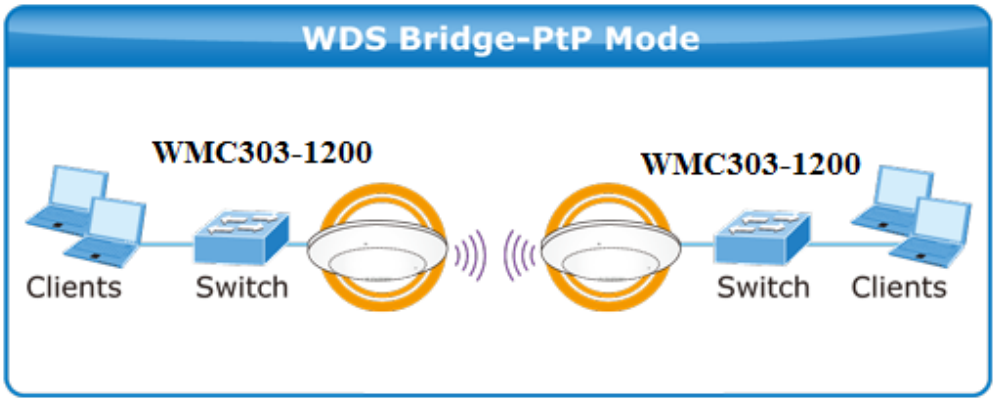
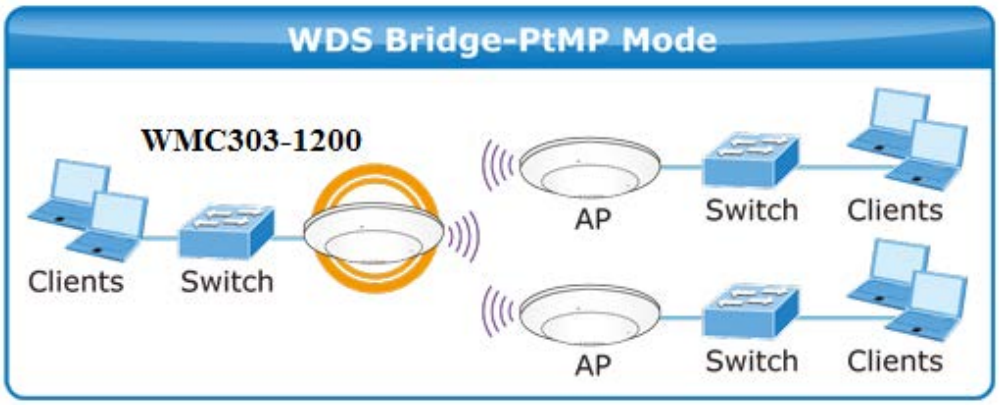

Wireless Access Control - WLAN1 (5GHz)
If you choose 'Allowed Listed', only those clients whose wireless MAC addresses are in the access control list will be able to connect to your Access Point. When 'Deny Listed' is selected, these wireless clients on the list will not be able to connect the Access Point.
Wireless Access Control Mode:
Deny Listed
MAC Address:
Comment:
Apply Changes
Reset
Current Access Control List:
MAC Address
Comment
Select
9C:F6:1A:00:00:01
deny
Delete Selected
Delete All
Reset

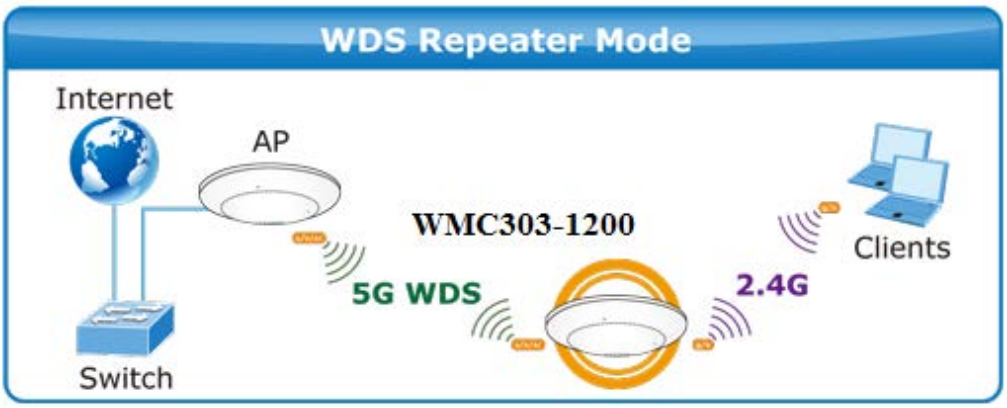
Figure 5-37 Wireless Access Control – Deny

5.3.6 WDS

WDS (Wireless Distribution System) feature can be used to extend your existing 2.4G or 5G wireless network coverage. Here we present you how to configure such feature in 2.4GHz, which also applies to 5GHz.







Before configuring the WDS Setting page, you have to select the wireless mode to “WDS” on the **WLAN1 (5GHz)** -> **Basic Settings** web page.

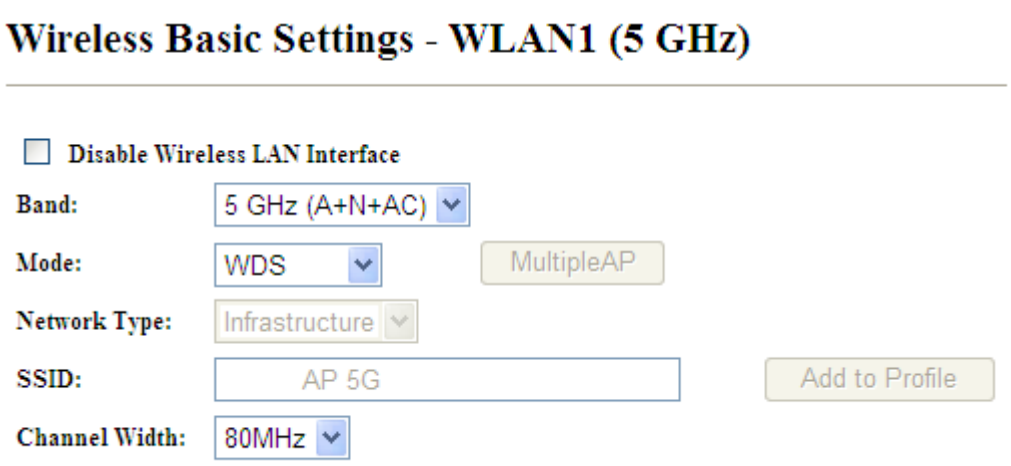


Figure 5-38 WDS Mode – 5GHz

Choose menu "**WLAN1 (5GHz) → WDS Settings**" to configure WDS to connect the WMC303-1W-1T-1200 with another AP on this page. After the configuration, please click the "Apply Changes" button to save the settings.

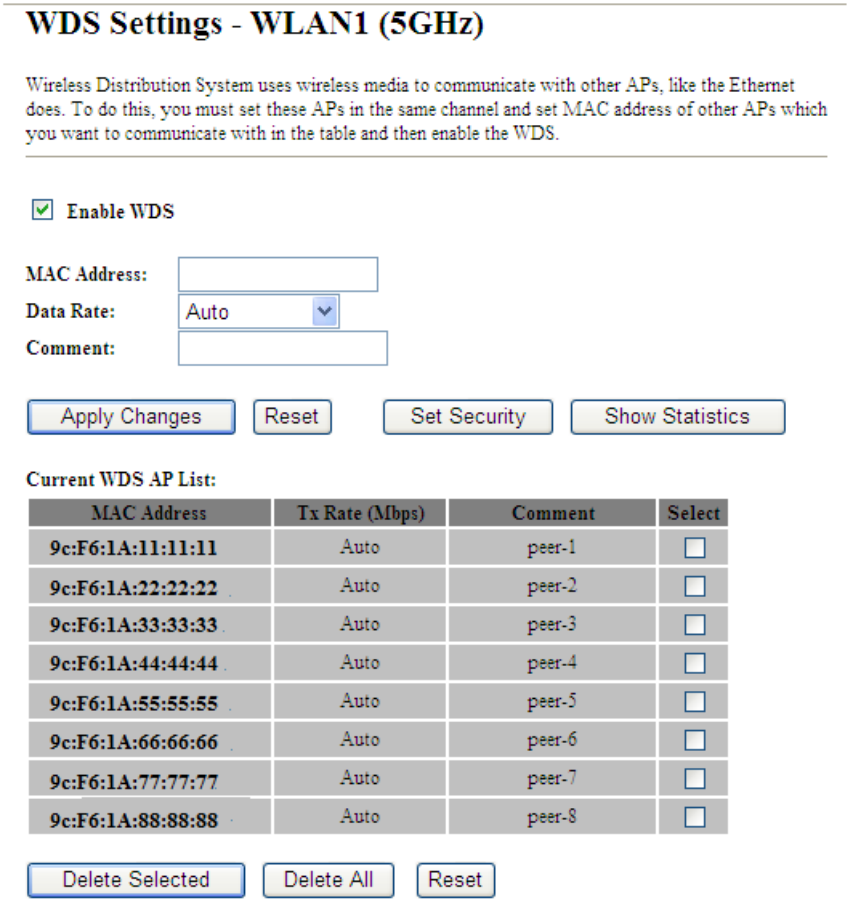


Figure 5-39 WDS Settings – 5GHz

WDS Security Setup -wlan1
This page allows you setup the wireless security for WDS. When enabled, you must make sure each WDS device has adopted the same encryption algorithm and Key.
Encryption:
None
WEP Key Format:
ASCII (5 characters)
WEP Key:
Pre-Shared Key Format:
Passphrase
Pre-Shared Key:
Apply Changes
Reset

Figure 5-40 WDS – Set Security

The page includes the following fields:

Object	Description
Enable WDS	Check the box to enable the WDS function. Please select **WDS** or **AP+WDS** in the Mode of **Wireless Basic Settings** before you enable WDS on this page.
MAC Address	You can enter the MAC address of the AP you want to connect with.
Data Rate	Default is "**Auto"**.
Comment	You can make some comment for each MAC address on the list.
Set Security	Click the "**Set Security**" button to configure the wireless security parameters of the AP you want to connect via WDS.
Show Statics	Click the "Show Statics" button to show the WDS AP.
Current WDS AP List	You can select some MAC addresses of the AP and click the "Delete Selected" button to delete it.

Note

WDS feature can only be implemented between 2 wireless devices that both support the WDS feature. Plus, **channel**, **security settings** and **security key** must be **the same** on both such devices.

Note

To encrypt your wireless network, click "**Set Security**". For the detail of wireless security, see **section 5.3.3**. Do remember to reboot the device after you save your wireless security settings; otherwise, the WDS feature may not function.

5.3.7 Site Survey

Choose menu "**WLAN1 (5GHz) → Site Survey**" to scan the available local AP. If any Access Point is found, you could choose any one to connect with manually when the **Client Mode** is enabled.

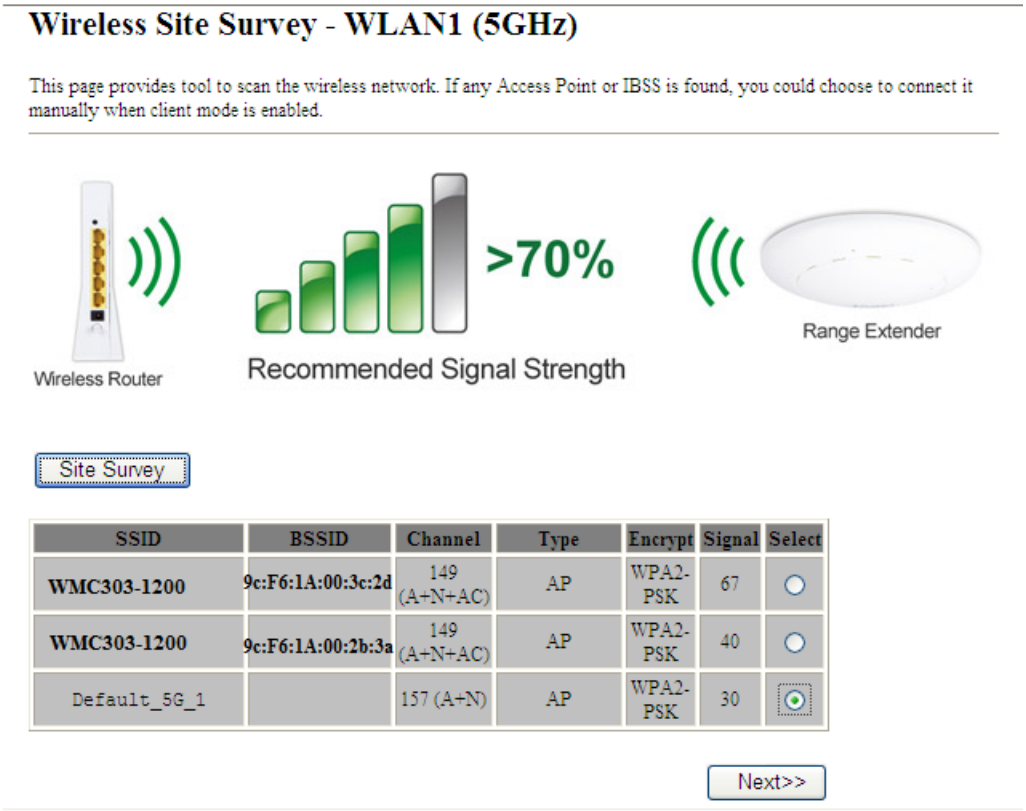


Figure 5-41 Site Survey – 5GHz

5.3.8 WPS

WPS (**Wi-Fi Protected Setup**) is designed to ease setup of security Wi-Fi networks and subsequently network management. This Wireless Router supports WPS features for **AP mode**, **AP+WDS mode**, **Infrastructure-Client mode**, and the wireless root interface of **Universal Repeater mode**.

Simply enter a PIN code or press the software PBC button or hardware WPS button (if any) and a secure wireless connection is established.

- **PBC:** If you find the WPS LED blinking for 2 minutes after you press the hardware WPS button on the device, it means that PBC encryption method is successfully enabled. And an authentication will be performed between your router and the WPS/PBC-enabled wireless client device during this time; if it succeeds, the wireless client device connects to your device, and the WPS LED turns off. Repeat steps mentioned above if you want to connect more wireless client devices to the device.
- **PIN :** To use this option, you must know the PIN code from the wireless client and enter it in corresponding field on your device while using the same PIN code on client side for such connection.

The page includes the following fields:

Object	Description
Disable WPS	You can check the box to disable the WPS function.
WPS Status	Here you can check if the connection via WPS is established or not.
Self-PIN Number	It is the PIN number of the WMC303-1W-1T-1200 here.
Push Button Configuration	Click the “Start PBC” to activate WPS as well in the client device within 2 minutes.
Client PIN Number	In addition to the PBC method, you can also use the PIN method to activate the WPS. Just enter the PIN number of the client device in the field and click the “Start PIN” button.

The WPS encryption can be implemented only between your Router and another WPS-capable device.

➢ Example of how to establish wireless connection using **WPS**. Please take the following steps:

Step 1. Choose menu “**WLAN1 (5GHz) → WPS**” to configure the setting for WPS. After the configuration, please click the “Apply Changes” button to save the settings.

Step 2. Add a new device.

If the wireless adapter supports Wi-Fi Protected Setup (WPS), you can establish a wireless connection between wireless adapter and AP using either Push Button Configuration (PBC) method or PIN method.

To build a successful connection by WPS, you should also do the corresponding configuration of the new device for WPS function.

A. By Push Button Configuration (PBC)

i. Click the “Start PBC” Button on the WPS page of the AP.

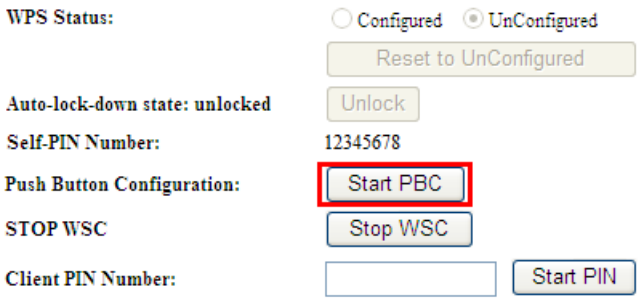


Figure 5-42 WPS-PBC – 5GHz-1

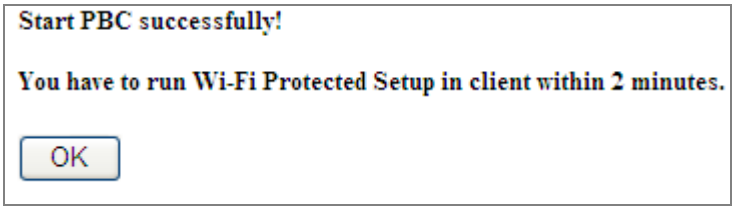


Figure 5-43 WPS-PBC – 5GHz-2

ii. Press and hold the WPS Button equipped on the adapter directly for 2 or 3 seconds. Or you can click the WPS button with the same function in the configuration utility of the adapter. The process must be finished within 2 minutes.

iii. Wait for a while until the next screen appears. Click **OK** to complete the WPS configuration.

B. By PIN

If the new device supports Wi-Fi Protected Setup and the PIN method, you can add it to the network by PIN with the following two methods.

Method One: Enter the PIN of your Wireless adapter into the configuration utility of the AP

i. Enter the PIN code of the wireless adapter in the field behind **Client PIN Number** in the following figure. Then click **Start PIN**.

The PIN code of the adapter is always displayed on the WPS configuration screen.

Figure 5-44 WPS-PIN – 5GHz-1

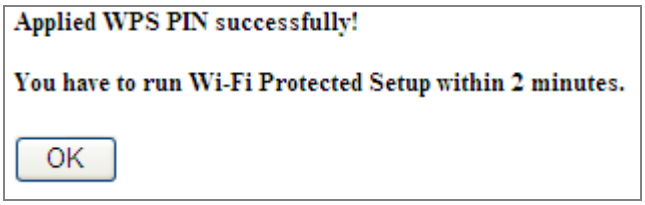


Figure 5-45 WPS-PIN – 5GHz-2

ii. For the configuration of the wireless adapter, please choose the option that you want to **enter PIN into the AP (Enrollee)** in the configuration utility of the WPS and click **Next** until the process finishes.

Method Two: Enter the PIN of the AP into the configuration utility of your Wireless adapter

i. Click the "Start PBC" Button on the WPS page of the AP. Get the Current PIN code of the AP in WPS page (each AP has its unique PIN code).

Figure 5-46 WPS-PIN – 5GHz-3

ii. For the configuration of the wireless adapter, please choose the option that you want to **enter the PIN of the AP (Registrar)** in the configuration utility of the Wireless adapter and enter it into the field. Then click **Next** until the process finishes.

5.3.9 Schedule

Wireless Schedules will enable or disable your wireless access at a set time based on your predefined schedule. This feature is often used for restricting access to all users (such as children, employees and guests) during specific times of the day for parental control or security reasons.

Choose menu "**WLAN1 (5GHz) → Schedule**" to configure the schedule rule of enabling wireless function. After the configuration, please click the "Apply Changes" button to save the settings.

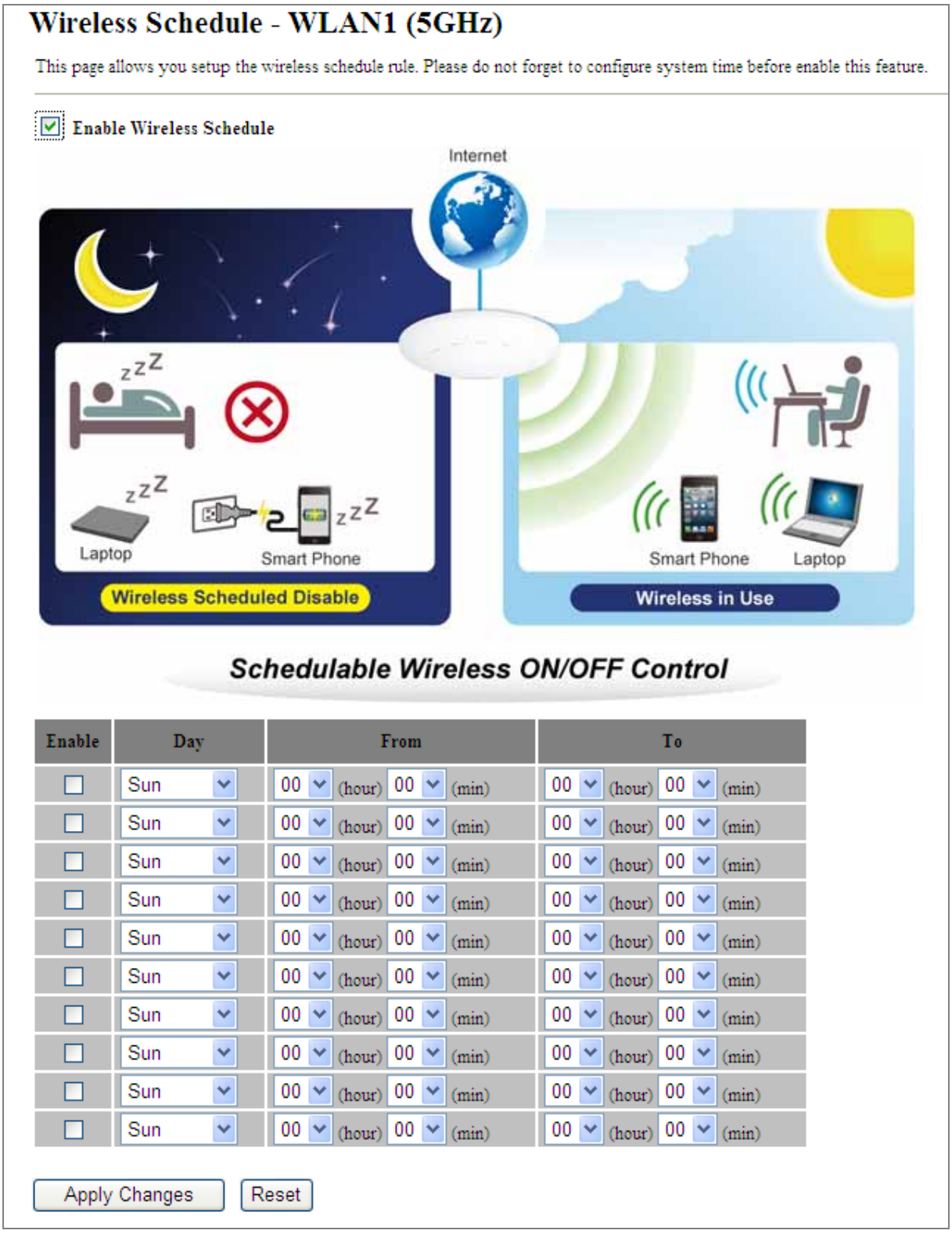


Figure 5-47 Schedule - 5GHz

When setting the Wireless Schedule, it is important to ensure that your **System Clock** settings have been configured. If not, your Wireless Schedule will not function correctly.

5.4 WLAN2 (2.4GHz)

The Wireless menu contains submenus of the settings about wireless network. Please refer to the following sections for the details.

Figure 5-48 2.4GHz Wireless Main Menu

5.4.1 Basic Settings

Choose menu "**WLAN2 (2.4GHz) → Basic Settings**" to configure the 2.4GHz basic settings for the wireless network on this page. After the configuration is done, please click the "**Apply Changes**" button to save the settings.

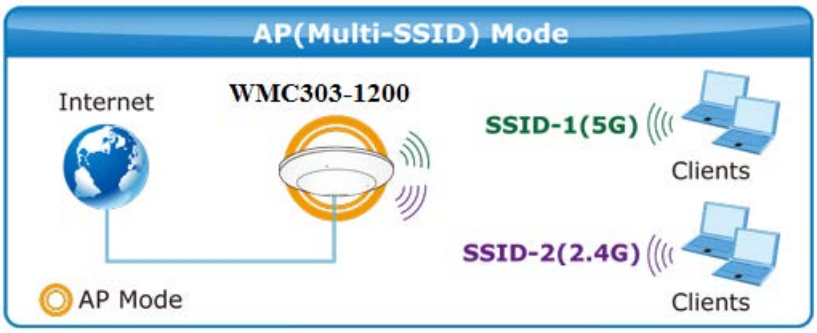
First of all, the wireless AP supports multiple wireless modes for different network applications, which include:

- **AP**
- **Multiple SSIDs**
- **Universal Repeater**
- **Client**
- **WDS**
- **AP+WDS**

It is so easy to combine the WMC303-1200 with the existing wired network. The WMC303-1200 definitely provides a total network solution for the home and the SOHO users.

- **AP**

Standard **Access Point**



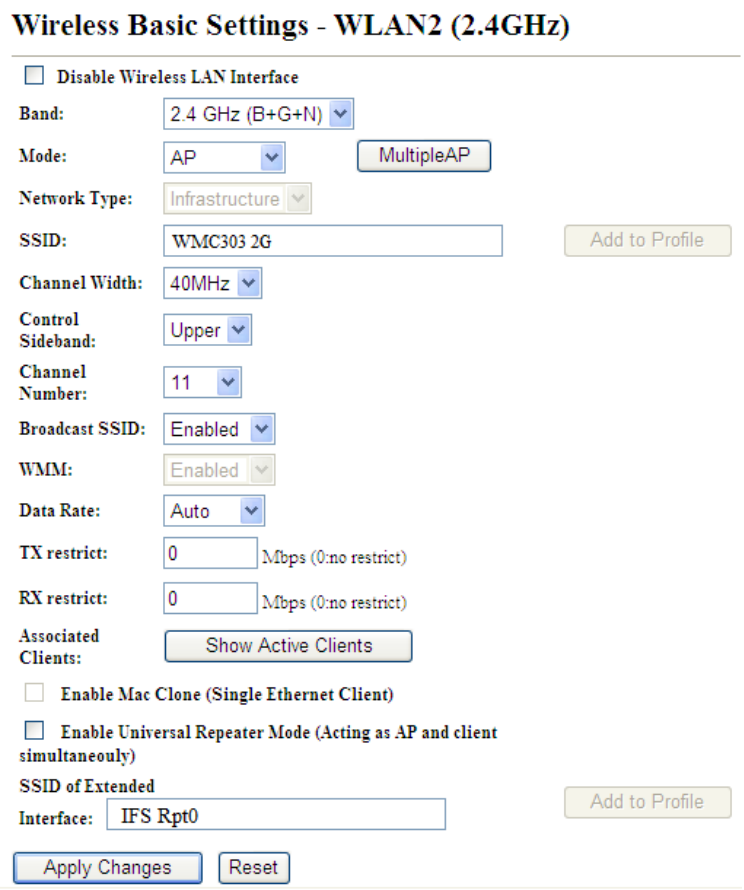


Figure 5-49 2.4GHz Wireless Basic Settings – AP

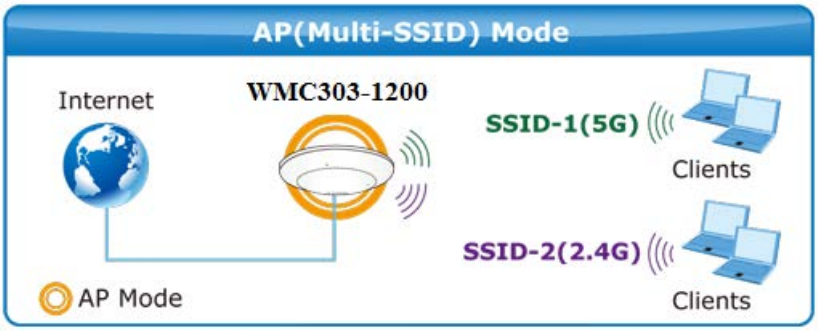
The page includes the following fields:

Object	Description
Disable Wireless LAN Interface	Check the box to disable the wireless function.
Band	Select the desired mode. Default is "**2.4GHz (B+G+N)**". It is strongly recommended that you set the Band to "2.4GHz (B+G+N)", and all of 802.11b, 802.11g, and 802.11n wireless stations can connect to the WMC303-1W-1T-1200. ■ **2.4 GHz (B)**: 802.11b mode, rate is up to 11Mbps ■ **2.4 GHz (G)**: 802.11g mode, rate is up to 54Mbps ■ **2.4 GHz (N)**: 802.11n mode, rate is up to 300Mbps(2T2R) ■ **2.4 GHz (B+G)**: 802.11b/g mode, rate is up to 11Mbps or 54Mbps ■ **2.4 GHz (G+N)**: 802.11g/n mode, rate is up to 54Mbps or 300Mbps ■ **2.4 GHz (B+G+N)**: 802.11b/g/n mode, rate is up to 11Mbps, 54Mbps, or 300Mbps
Mode	There are four kinds of wireless mode selections: ■ **AP** ■ **Client** ■ **WDS** ■ **AP+WDS** If you select WDS or AP+WDS, please click "**WDS Settings**" submenu for the related configuration. Furthermore, click the "**Multiple AP"** button to enable multiple SSID function.
SSID	The ID of the wireless network. User can access the wireless network via the ID only. However, if you switch to Client Mode, this field becomes the SSID of the AP you want to connect with. Default: **WMC303 2G**
Channel Width	You can select **20MHz**, or **40MHz**.
Channel Number	You can select the operating frequency of wireless network. Default: **11**
Broadcast SSID	If you enable "Broadcast SSID", every wireless station located within the coverage of the AP can discover its signal easily. If you are building a public wireless network, enabling this feature is recommended. In private network, disabling "Broadcast SSID" can provide better wireless network security. Default is "**Enabled**".
Data Rate	Set the wireless data transfer rate to a certain value. Since most of wireless devices will negotiate with each other and pick a proper data transfer rate automatically, **it's not necessary to change this value**

	unless you know what will happen after modification. Default is "**Auto"**.
Associated Clients	Click the "**Show Active Clients**" button to show the status table of active wireless clients.
Enable Universal Repeater Mode **(Acting as AP and client simultaneously)**	Universal Repeater is a technology used to extend wireless coverage. To enable Universal Repeater mode, check the box and enter the SSID you want to broadcast in the field below. Then please click "Security" submenu for the related settings of the AP you want to connect with.

■ Multiple-SSID

Enable multiple-SSID can broadcast multiple WLAN SSID's using virtual interfaces. You can have different encryption settings for each WLAN and you can restrict what they have access to.



Choose menu "**WLAN1 (2.4GHz)** → **Basic Settings** → **Multiple AP**" to configure the device as a general wireless access point with multiple SSIDs.

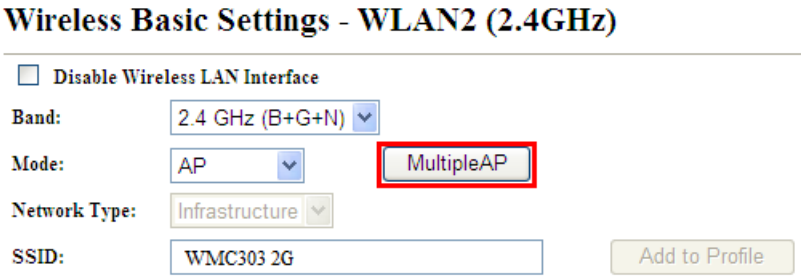


Figure 5-50 2.4GHz Wireless Basic Settings – Multiple AP

The device supports up to four multiple Service Set Identifiers. You can back to the **Basic Settings** page to set the Primary SSID. The SSID's factory default setting is **IFS 2.4G VAP1~4 (Multiple-SSID 1~4)**. The SSID can be easily changed to connect to an existing wireless network or to establish a new wireless network. When the information for the new SSID is finished, click the **Apply Changes** button to let your changes take effect.

Multiple APs Multiple APs - WLAN2 (2.4GHz)

This page shows and updates the wireless setting for multiple APs.

No.	Enable	Band	SSID	Data Rate	Broadcast SSID	WMM	Access	Tx Restrict (Mbps)	Rx Restrict (Mbps)	Active Client List	WLAN mode
AP1	☑	2.4 GHz (B+G+N)	IFS 2.4G VA	Auto	Enabled	Enabled	LAN	0	0	Show	AP
AP2	☑	2.4 GHz (B+G+N)	IFS 2.4G VA	Auto	Enabled	Enabled	LAN	0	0	Show	AP
AP3	☑	2.4 GHz (B+G+N)	IFS 2.4G VA	Auto	Enabled	Enabled	LAN	0	0	Show	AP
AP4	☑	2.4 GHz (B+G+N)	IFS 2.4G VA	Auto	Enabled	Enabled	LAN	0	0	Show	AP

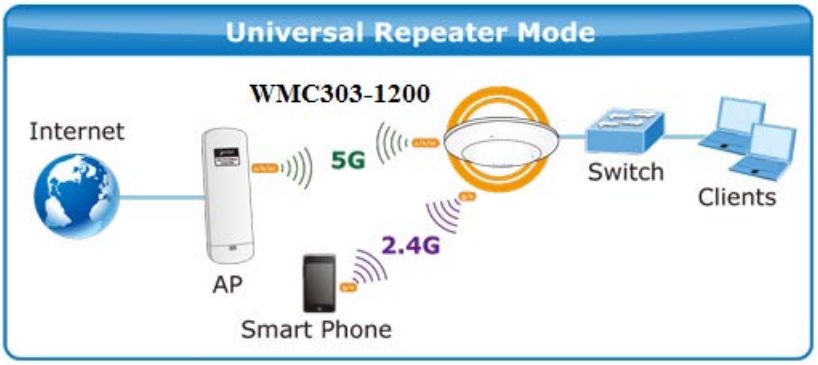
Apply Changes Reset

Figure 5-51 2.4GHz Multiple-SSID

Once you have applied and saved those settings, you can then go to the "**WLAN1 (2.4GHz) → Security**" page on the AP to set up security settings for each of the SSIDs.

■ Universal Repeater

This mode allows the AP with its own BSS to relay data to a root AP to which it is associated with WDS disabled. The wireless repeater relays signal between its stations and the root AP for greater wireless range.



2. Example of how to configure **Universal Repeater Mode**. Please take the following steps:

To configure each wireless parameter, please go to the "**WLAN2 (2.4GHz) → Basic Settings**" page.

Step 1. Configure wireless mode to "**AP**" and then check "**Enable Universal Repeater Mode (Acting as AP and client simultaneously)**". Click "**Apply Changes**" to take effect.

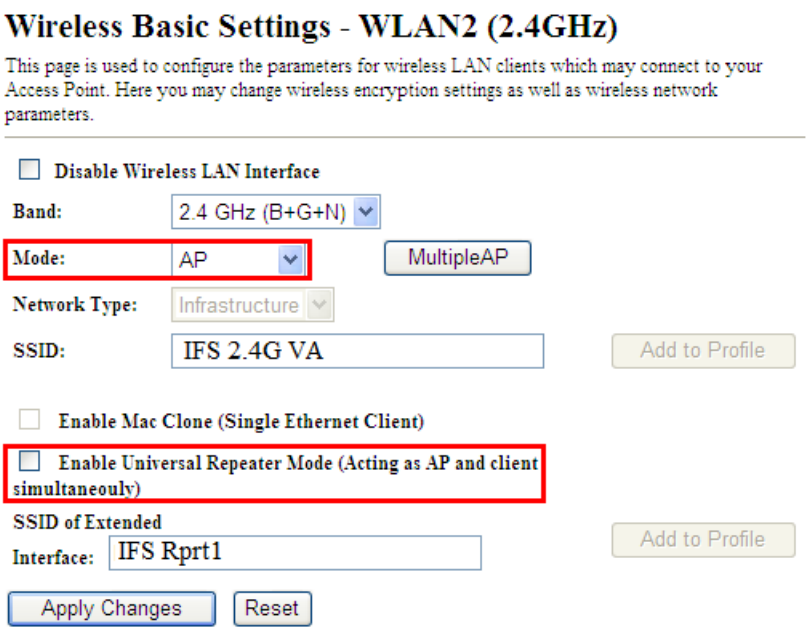

Wireless Basic Settings - WLAN2 (2.4GHz)
This page is used to configure the parameters for wireless LAN clients which may connect to your Access Point. Here you may change wireless encryption settings as well as wireless network parameters.
Disable Wireless LAN Interface
Band:
2.4 GHz (B+G+N)
Mode:
AP
MultipleAP
Network Type:
Infrastructure
SSID:
IFS 2.4G VA
Add to Profile
Enable Mac Clone (Single Ethernet Client)
Enable Universal Repeater Mode (Acting as AP and client simultaneouly)
SSID of Extended Interface:
IFS Rprt1
Add to Profile
Apply Changes
Reset

Figure 5-52 2.4GHz Universal Repeater-1

Step 2. Go to **2.4GHz Site Survey** page to find the root AP. Select the root AP that you want to repeat the signal, and then click "**Next**".

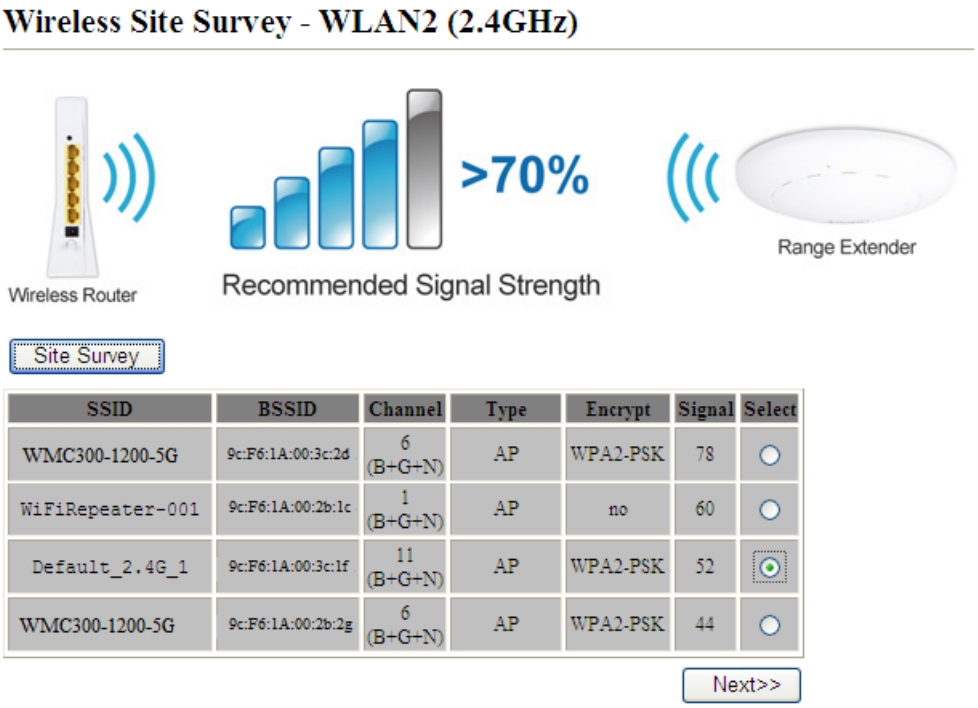


Figure 5-53 2.4GHz Universal Repeater-2

Step 3. Select the correct encryption method and enter the security key. Then, click "**Connect**".

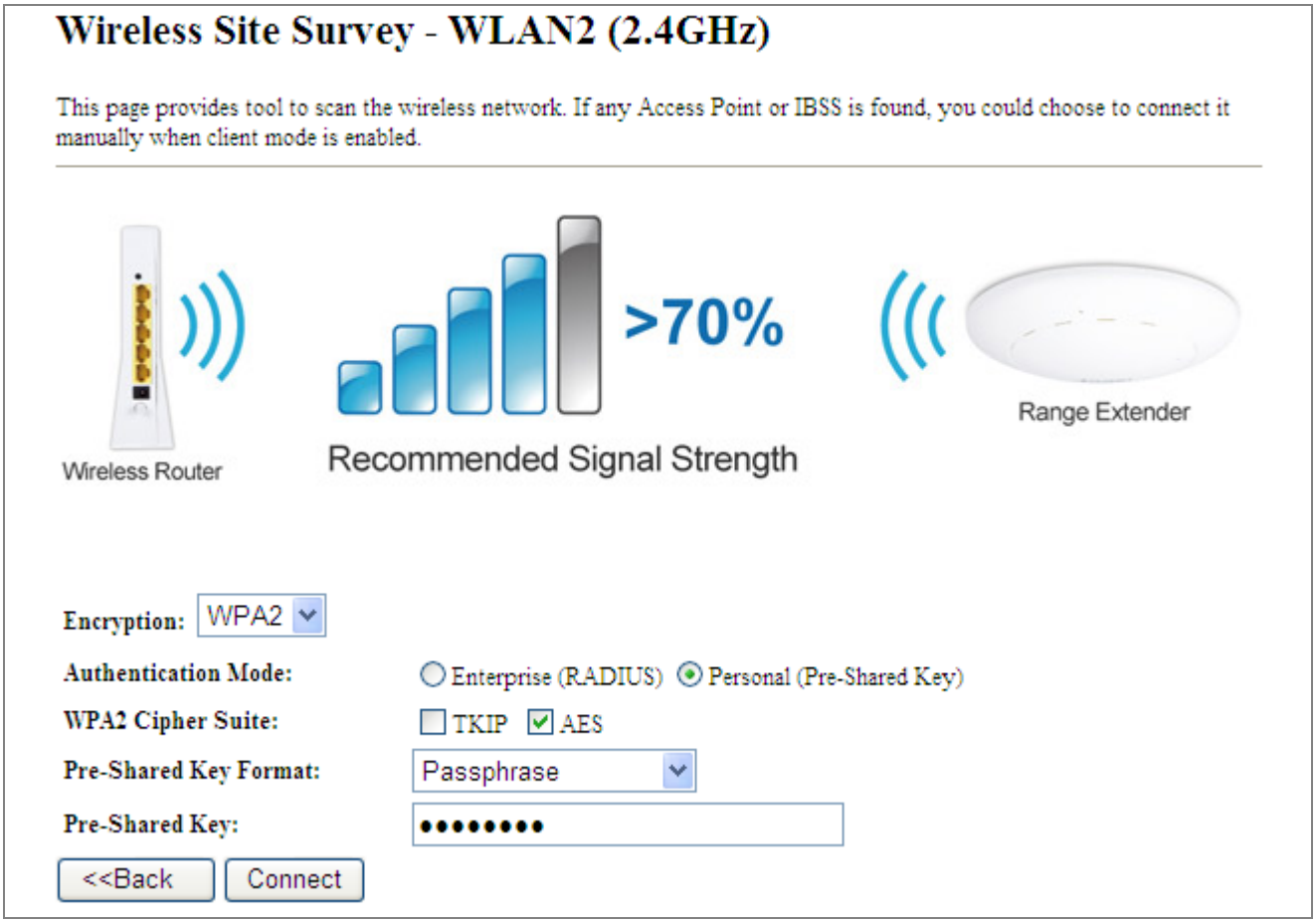

Wireless Site Survey - WLAN2 (2.4GHz)
This page provides tool to scan the wireless network. If any Access Point or IBSS is found, you could choose to connect it manually when client mode is enabled.
Wireless Router
>70%
Recommended Signal Strength
Range Extender
Encryption: WPA2
Authentication Mode: Enterprise (RADIUS) Personal (Pre-Shared Key)
WPA2 Cipher Suite: TKIP AES
Pre-Shared Key Format: Passphrase
Pre-Shared Key: ••••••••
<<Back
Connect

Figure 5-54 2.4GHz Universal Repeater-3

Step 4. Check "**Add to Wireless Profile**" and click "**Reboot Now**".

Figure 5-55 2.4GHz Universal Repeater-4

Step 5. Go to "**Management-> Status**" page to check whether the state of Repeater interface should be "**Connected**".

Figure 5-56 2.4GHz Universal Repeater-5

■ Client (Infrastructure)

Combine the Wireless Router to the Ethernet devices such as TV, Game player, or HDD and DVD, to make them be wireless stations.

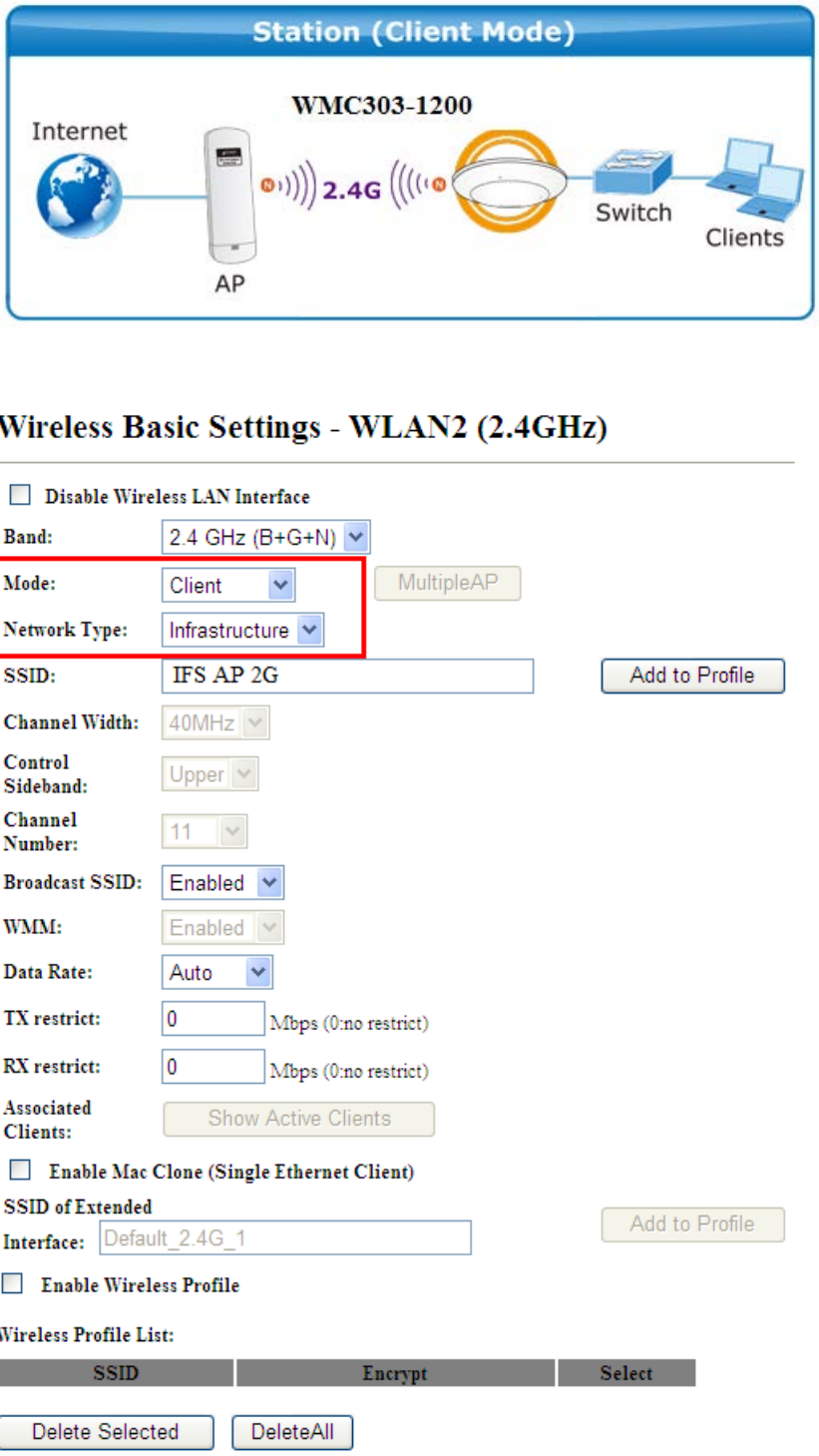


Figure 5-57 2.4GHz Wireless Basic Settings – Client

The page includes the following fields:

Object	Description
Disable Wireless LAN Interface	Check the box to disable the wireless function.
Band	Select the desired mode. Default is "**2.4GHz (B+G+N)**". It is strongly recommended that you set the Band to "2.4GHz (B+G+N)", and all of 802.11b, 802.11g, and 802.11n wireless stations can connect to the WMC303-1200.

	■ **2.4 GHz (B)**: 802.11b mode, rate is up to 11Mbps ■ **2.4 GHz (G)**: 802.11g mode, rate is up to 54Mbps ■ **2.4 GHz (N)**: 802.11n mode, rate is up to 300Mbps(2T2R) ■ **2.4 GHz (B+G)**: 802.11b/g mode, rate is up to 11Mbps or 54Mbps ■ **2.4 GHz (G+N)**: 802.11g/n mode, rate is up to 54Mbps or 300Mbps ■ **2.4 GHz (B+G+N)**: 802.11b/g/n mode, rate is up to 11Mbps, 54Mbps, or 300Mbps
Mode	There are four kinds of wireless mode selections: ■ **AP** ■ **Client** ■ **WDS** ■ **AP+WDS** If you select WDS or AP+WDS, please click "**WDS Settings**" submenu for the related configuration. Furthermore, click the "**Multiple AP"** button to enable multiple SSID function.
Network Type	In **Infrastructure**, the wireless LAN serves as a wireless station. And the user can use the PC equipped with the WMC303-1200 to access the wireless network via other access points. In **Ad hoc**, the wireless LAN will use the Ad-hoc mode to operate. Default is "**Infrastructure**". Note: only while the wireless mode is set to "**Client**", then the **Network Type** can be configured.
SSID	The ID of the wireless network. User can access the wireless network via the ID only. However, if you switch to Client Mode, this field becomes the SSID of the AP you want to connect with. Default: **IFS AP 2G**
Broadcast SSID	If you enable "Broadcast SSID", every wireless station located within the coverage of the WMC303-1200 can discover its signal easily. If you are building a public wireless network, enabling this feature is recommended. In private network, disabling "Broadcast SSID" can provide better wireless network security. Default is "**Enabled**".
Data Rate	Set the wireless data transfer rate to a certain value. Since most of wireless devices will negotiate with each other and pick a proper data transfer rate automatically, **it's not necessary to change this value unless you know what will happen after modification.** Default is "**Auto"**.
Enable Mac Clone (Single Ethernet Client)	Enable Mac Clone.

➢ Example of how to configure **Client Mode**. Please take the following steps:

To configure each wireless parameter, please go to the "**WLAN2 (2.4GHz)** → **Basic Settings**" page.

Step 1. Go to "**WLAN2 (2.4GHz)** → **Site Survey**" page and click "**Site Survey**" button.

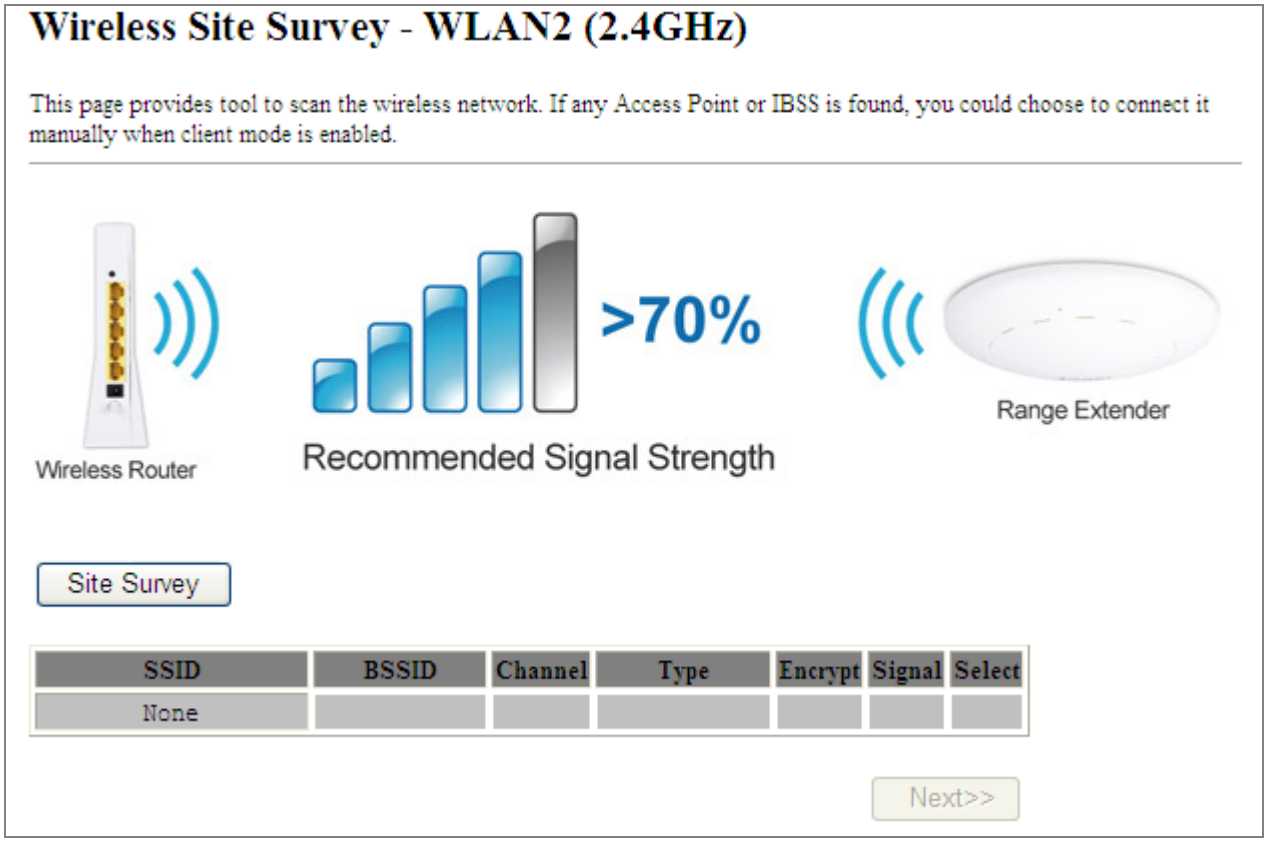


Figure 5-58 Client – Survey

Step 2. Choose the root AP from the list. If the root AP is not listed in the table, re-click "**Site Survey**" to update the list.

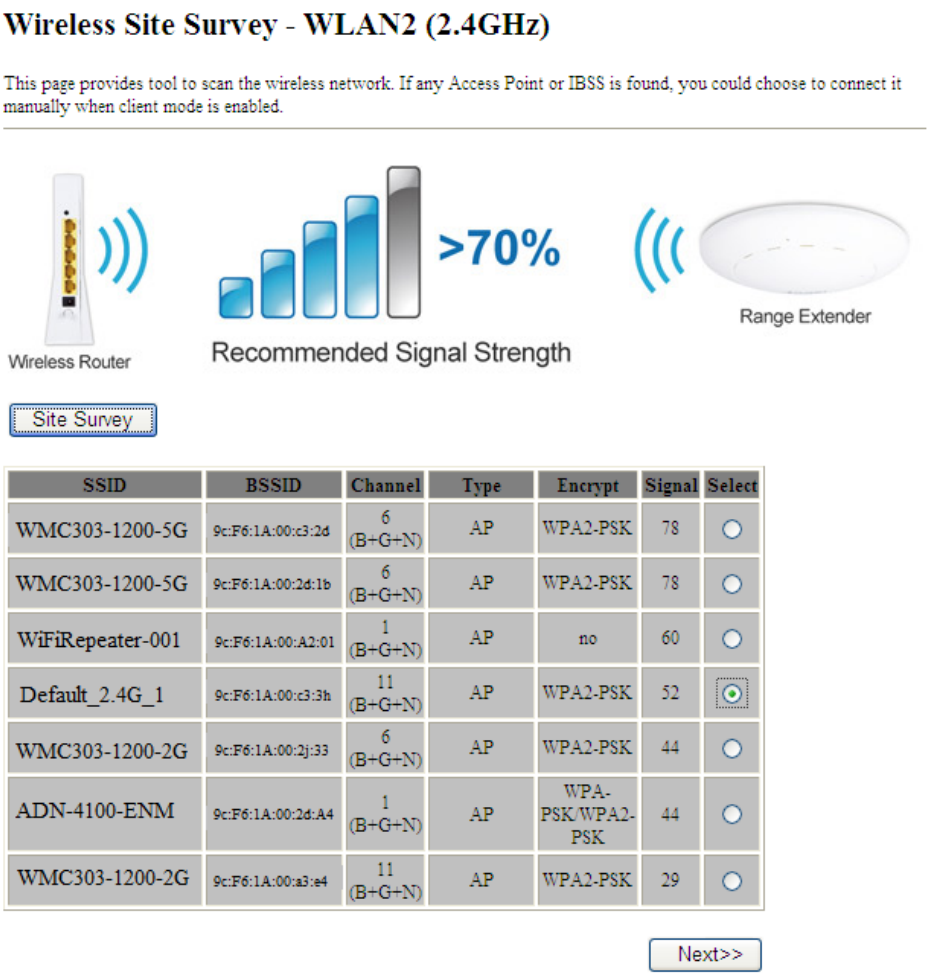

Wireless Site Survey - WLAN2 (2.4GHz)
This page provides tool to scan the wireless network. If any Access Point or IBSS is found, you could choose to connect it manually when client mode is enabled.
Wireless Router
>70%
Recommended Signal Strength
Range Extender
Site Survey
SSID BSSID Channel Type Encrypt Signal Select
WMC303-1200-5G 9c:F6:1A:00:c3:2d 6 (B+G+N) AP WPA2-PSK 78
WMC303-1200-5G 9c:F6:1A:00:2d:1b 6 (B+G+N) AP WPA2-PSK 78
WiFiRepeater-001 9c:F6:1A:00:A2:01 1 (B+G+N) AP no 60
Default_2.4G_1 9c:F6:1A:00:c3:3h 11 (B+G+N) AP WPA2-PSK 52
WMC303-1200-2G 9c:F6:1A:00:2j:33 6 (B+G+N) AP WPA2-PSK 44
ADN-4100-ENM 9c:F6:1A:00:2d:A4 1 (B+G+N) AP WPA-PSK/WPA2-PSK 44
WMC303-1200-2G 9c:F6:1A:00:a3:e4 11 (B+G+N) AP WPA2-PSK 29
Next>>

Figure 5-59 Client – AP List

Step 3. Enter the Security Key of the root AP and then click "**Connect**".

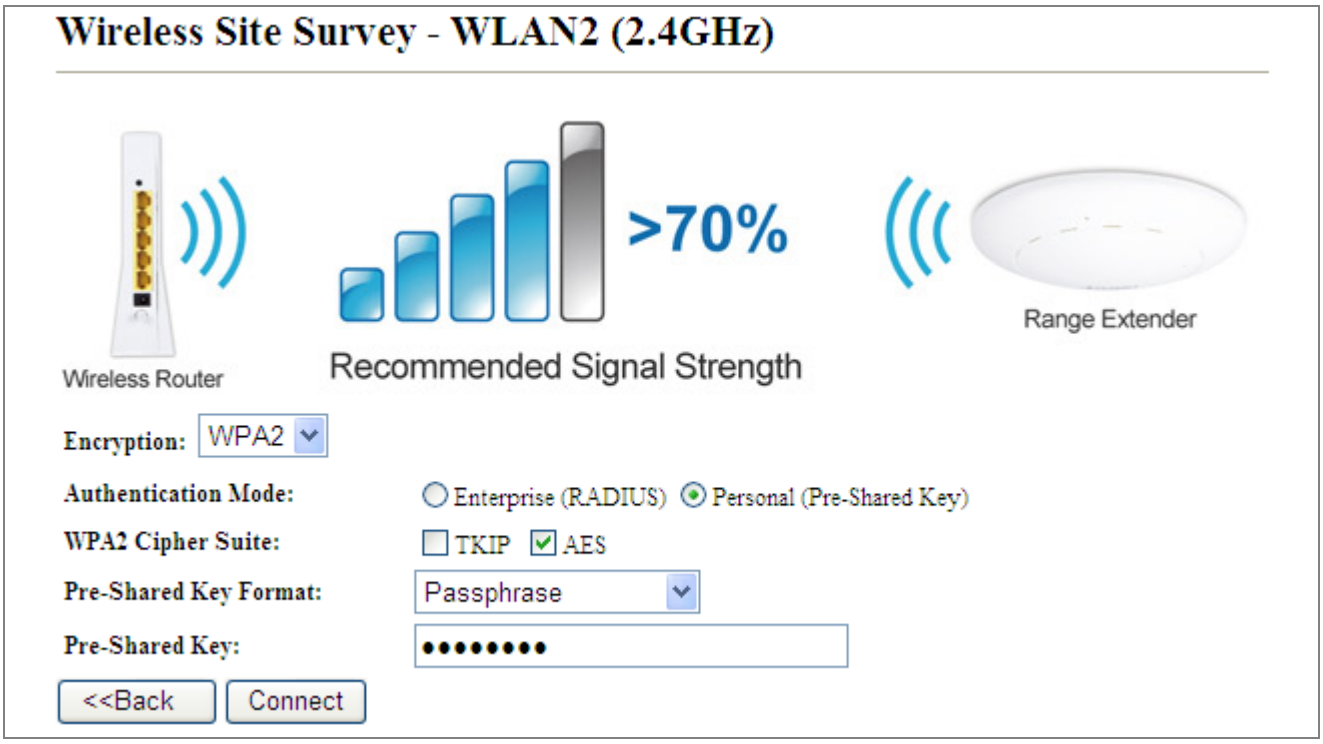


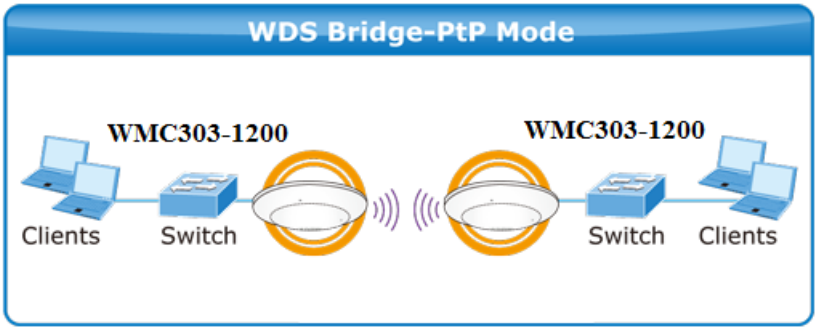
Figure 5-60 Client – Security

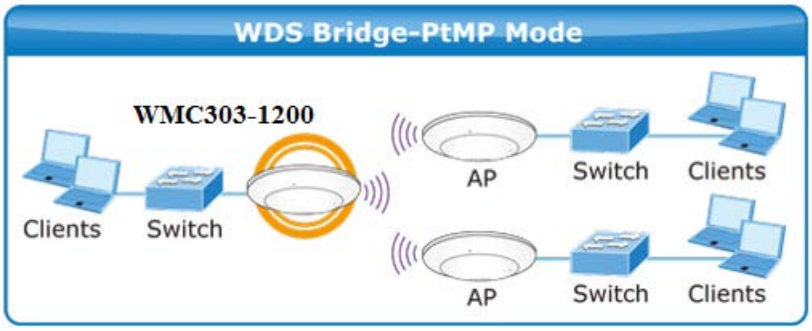
Step 4. Wait until the connection established. Check the "**Add to Wireless Profile**" option and then reboot it.

Figure 5-61 Client – Status

■ WDS

Connect this Wireless AP with up to 8 WDS-capable wireless APs to expand the scope of network.





Wireless Basic Settings - WLAN2 (2.4GHz)

This page is used to configure the parameters for wireless LAN clients which may connect to your Access Point. Here you may change wireless encryption settings as well as wireless network parameters.

Disable Wireless LAN Interface

Band: 2.4 GHz (B+G+N)

Mode: WDS MultipleAP

Network Type: Infrastructure

SSID: IFS AP 2G Add to Profile

Channel Width: 40MHz

Control Sideband: Upper

Channel Number: 11

Broadcast SSID: Enabled

WMM: Enabled

Data Rate: Auto

TX restrict: 0 Mbps (0:no restrict)

RX restrict: 0 Mbps (0:no restrict)

Associated Clients: Show Active Clients

Enable Mac Clone (Single Ethernet Client)

Enable Universal Repeater Mode (Acting as AP and client simultaneouly)

SSID of Extended Interface: Default_2.4G_1 Add to Profile

Apply Changes Reset

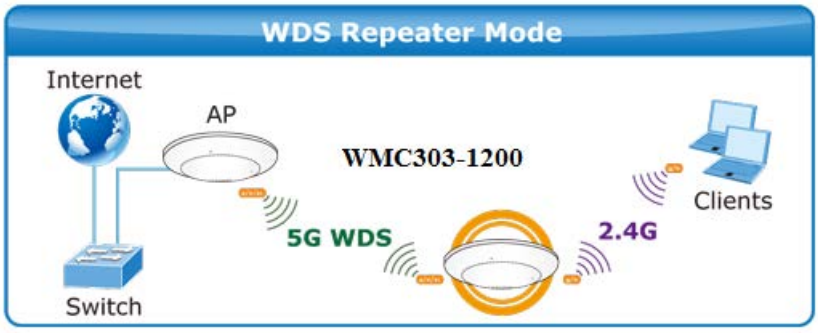
Figure 5-62 2.4GHz Wireless Basic Settings – WDS

The page includes the following fields:

Object	Description
Disable Wireless LAN Interface	Check the box to disable the wireless function.
Band	Select the desired mode. Default is "**2.4GHz (B+G+N)**". It is strongly recommended that you set the Band to "2.4GHz (B+G+N)", and all of 802.11b, 802.11g, and 802.11n wireless stations can connect to the WMC303-1200. ■ **2.4 GHz (B)**: 802.11b mode, rate is up to 11Mbps ■ **2.4 GHz (G)**: 802.11g mode, rate is up to 54Mbps ■ **2.4 GHz (N)**: 802.11n mode, rate is up to 300Mbps(2T2R) ■ **2.4 GHz (B+G)**: 802.11b/g mode, rate is up to 11Mbps or 54Mbps ■ **2.4 GHz (G+N)**: 802.11g/n mode, rate is up to 54Mbps or 300Mbps ■ **2.4 GHz (B+G+N)**: 802.11b/g/n mode, rate is up to 11Mbps, 54Mbps, or 300Mbps
Mode	There are four kinds of wireless mode selections: ■ **AP** ■ **Client** ■ **WDS** ■ **AP+WDS** If you select WDS or AP+WDS, please click "**WDS Settings**" submenu for the related configuration. Furthermore, click the "**Multiple AP"** button to enable multiple SSID function.
Channel Width	You can select **20MHz**, or **40MHz**
Control Sideband	You can select **Upper** or **Lower**.
Channel Number	You can select the operating frequency of wireless network.
Data Rate	Set the wireless data transfer rate to a certain value. Since most of wireless devices will negotiate with each other and pick a proper data transfer rate automatically, **it's not necessary to change this value unless you know what will happen after modification.** Default is "**Auto"**.

■ **AP+ WDS**

Connect this Wireless AP with up to 8 WDS-capable wireless APs, and connect another AP to provide service for all wireless stations within its coverage.



Wireless Basic Settings - WLAN2 (2.4GHz)

This page is used to configure the parameters for wireless LAN clients which may connect to your Access Point. Here you may change wireless encryption settings as well as wireless network parameters.

Disable Wireless LAN Interface

Band: 2.4 GHz (B+G+N)

Mode: AP+WDS MultipleAP

Network Type: Infrastructure

SSID: IFS AP 2G Add to Profile

Channel Width: 40MHz

Control Sideband: Upper

Channel Number: 11

Broadcast SSID: Enabled

WMM: Enabled

Data Rate: Auto

TX restrict: 0 Mbps (0:no restrict)

RX restrict: 0 Mbps (0:no restrict)

Associated Clients: Show Active Clients

Enable Mac Clone (Single Ethernet Client)

Enable Universal Repeater Mode (Acting as AP and client simultaneouly)

SSID of Extended Interface: Default_2.4G_1 Add to Profile

Apply Changes Reset

Figure 5-63 2.4GHz Wireless Basic Settings – WDS+AP

The page includes the following fields:

Object	Description
Disable Wireless LAN Interface	Check the box to disable the wireless function.
Country	Select your region from the pull-down list. This field specifies the region where the wireless function of the Router can be used. It may be illegal to use the wireless function of the Router

	in a region other than one of those specified in this field. If your country or region is not listed, please contact your local government agency for assistance.
Band	Select the desired mode. Default is "**2.4GHz (B+G+N)**". It is strongly recommended that you set the Band to "2.4GHz (B+G+N)", and all of 802.11b, 802.11g, and 802.11n wireless stations can connect to the WMC303-1200. ■ **2.4 GHz (B)**: 802.11b mode, rate is up to 11Mbps ■ **2.4 GHz (G)**: 802.11g mode, rate is up to 54Mbps ■ **2.4 GHz (N)**: 802.11n mode, rate is up to 300Mbps(2T2R) ■ **2.4 GHz (B+G)**: 802.11b/g mode, rate is up to 11Mbps or 54Mbps ■ **2.4 GHz (G+N)**: 802.11g/n mode, rate is up to 54Mbps or 300Mbps ■ **2.4 GHz (B+G+N)**: 802.11b/g/n mode, rate is up to 11Mbps, 54Mbps, or 300Mbps
Mode	There are four kinds of wireless mode selections: ■ **AP** ■ **Client** ■ **WDS** ■ **AP+WDS** If you select WDS or AP+WDS, please click "**WDS Settings**" submenu for the related configuration. Furthermore, click the "**Multiple AP"** button to enable multiple SSID function.
SSID	The ID of the wireless network. User can access the wireless network via the ID only. However, if you switch to Client Mode, this field becomes the SSID of the AP you want to connect with. Default: **IFS AP 2G**
Channel Width	You can select **20MHz**, or **40MHz**
Control Sideband	You can select **Upper** or **Lower**.
Channel Number	You can select the operating frequency of wireless network.
Broadcast SSID	If you enable "Broadcast SSID", every wireless station located within the coverage of the WMC303-1200 can discover its signal easily. If you are building a public wireless network, enabling this feature is recommended. In private network, disabling "Broadcast SSID" can provide better wireless network security. Default is "**Enabled**".
Data Rate	Set the wireless data transfer rate to a certain value. Since most of wireless devices will negotiate with each other and pick a proper data transfer rate automatically, **it's not necessary to change this value unless you know what will happen after modification.** Default is "**Auto"**.

Associated Clients	Click the "**Show Active Clients**" button to show the status table of active wireless clients.
Enable Universal Repeater Mode (Acting as AP and client simultaneously)	Universal Repeater is a technology used to extend wireless coverage. To enable Universal Repeater Mode, check the box and enter the SSID you want to broadcast in the field below. Then please click "Security" submenu for the related settings of the AP you want to connect with.

5.4.2 Advanced Settings

Choose menu "**WLAN2 (2.4GHz)→ Advanced Settings**" to configure the 2.4GHz advanced settings for the wireless network on this page. After the configuration, please click the "Apply" button to save the settings.

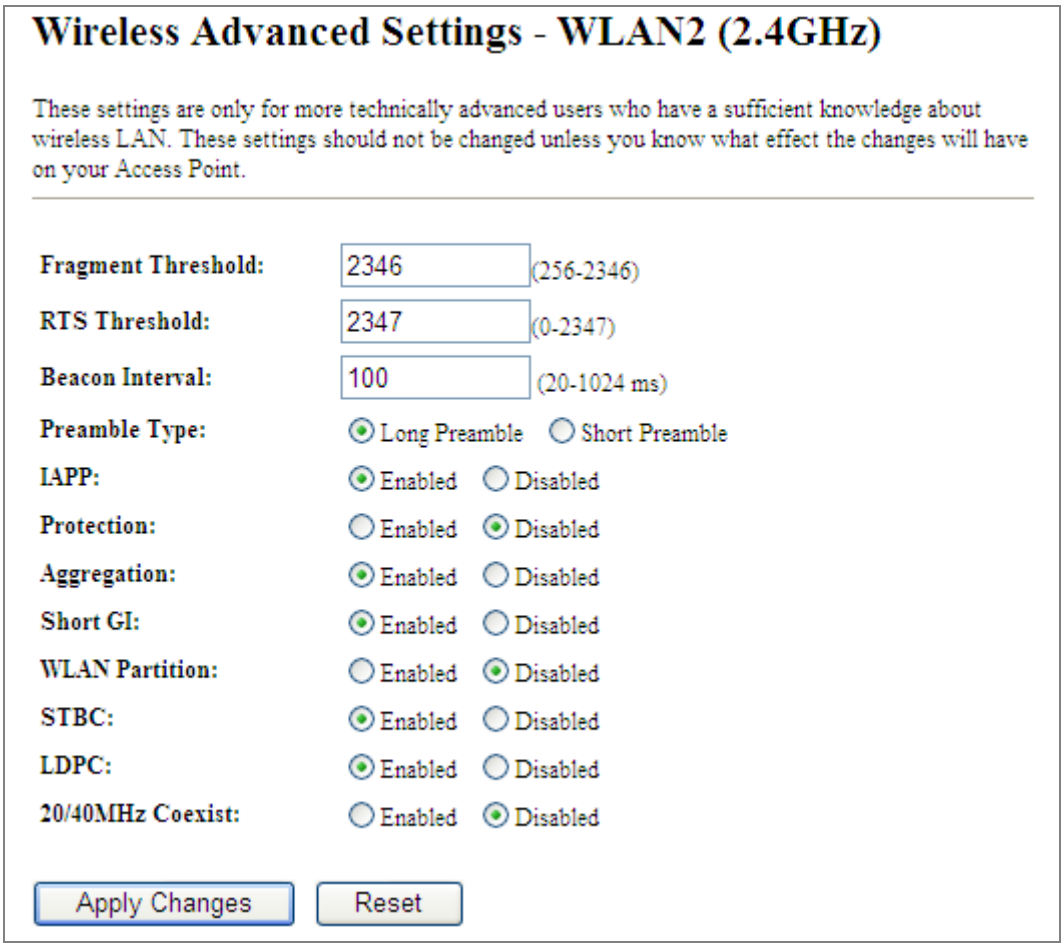

Wireless Advanced Settings - WLAN2 (2.4GHz)
These settings are only for more technically advanced users who have a sufficient knowledge about wireless LAN. These settings should not be changed unless you know what effect the changes will have on your Access Point.
Fragment Threshold: 2346 (256-2346)
RTS Threshold: 2347 (0-2347)
Beacon Interval: 100 (20-1024 ms)
Preamble Type: Long Preamble Short Preamble
IAPP: Enabled Disabled
Protection: Enabled Disabled
Aggregation: Enabled Disabled
Short GI: Enabled Disabled
WLAN Partition: Enabled Disabled
STBC: Enabled Disabled
LDPC: Enabled Disabled
20/40MHz Coexist: Enabled Disabled
Apply Changes
Reset

Figure 5-64 Wireless Advanced Settings – 2.4GHz

The page includes the following fields:

Object	Description
Fragment Threshold	You can specify the maximum size of packet during the fragmentation of data to be transmitted. If you set this value too low, it will result in bad performance. Default is “2346”.
RTS Threshold	When the packet size is smaller than the RTS threshold, the access point will not use the RTS/CTS mechanism to send this packet. Default is “2347”.
Beacon Interval	The interval of time that this access point broadcasts a beacon. Beacon is used to synchronize the wireless network. Default is “100”.
IAPP	**IAPP (Inter-Access Point Protocol)** enabled is recommended as it describes an optional extension to IEEE 802.11 that provides wireless access-point communications among multivendor systems. Default is “Enabled”.
Protection	It is recommended to enable the protection mechanism. This mechanism can decrease the rate of data collision between 802.11b and 802.11g wireless stations. When the protection mode is enabled, the throughput of the AP will be a little lower due to the transmission of heavy frame traffic. Default is “Disabled”.
Aggregation	It is a function where the values of multiple rows are grouped together. Default is “Enabled”
Short GI	It is used to set the time that the receiver waits for RF reflections to settle out before sampling data. Default is “Enabled”
WLAN Partition	This feature also called “**WLAN isolation**” or “**Block Relay**”. If this is enabled, wireless clients cannot exchange data through the WMC303-1200. Default is “Disabled”.
STBC	Activate **Space Time Blocking Code (STBC)** which does not need channel statement information (CSI). Default Setting: "Enabled"
LDPC	Low-density Parity-check Code is wireless data transmit algorithm. Default Setting: "Enabled"
20/40MHz Coexist	Configure 20/40MHz coexisting scheme. If you set up as "Enabled", "20MHz" and "40MHz" will coexist. Default Setting: "Disabled"

5.4.3 RF Output Power

Choose menu "**WLAN2 (2.4GHz) → RF Output Power**" to adjust to different levels of transmitting power for the wireless network according to various environment on this page. After the configuration, please click the "**Apply Changes**" button to save the settings.

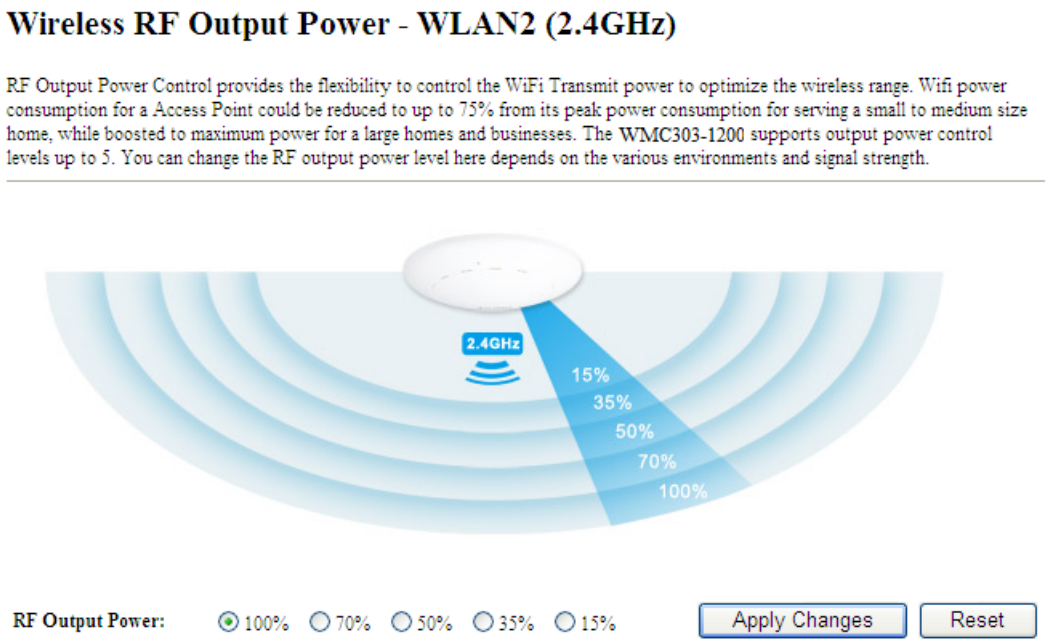

Wireless RF Output Power - WLAN2 (2.4GHz)
RF Output Power Control provides the flexibility to control the WiFi Transmit power to optimize the wireless range. Wifi power consumption for a Access Point could be reduced to up to 75% from its peak power consumption for serving a small to medium size home, while boosted to maximum power for a large homes and businesses. The WMC303-1200 supports output power control levels up to 5. You can change the RF output power level here depends on the various environments and signal strength.
2.4GHz
15%
35%
50%
70%
100%
RF Output Power:
100%
70%
50%
35%
15%
Apply Changes
Reset

Figure 5-65 RF Output Power – 2.4GHz

RF Output Power Control provides the flexibility to control the Wi-Fi Transmit power to optimize the wireless range. Wi-Fi power consumption for an Access Point could be reduced to up to 75% from its peak power consumption for serving small to medium size homes, while boosted to maximum power for large homes and businesses. The WMC303-1200 supports output power control levels up to 5. You can change the RF output power level here in accordance with various environments and signal strength.

5.4.4 Security

Choose menu "**WLAN2 (2.4GHz) → Security**" to configure the settings of wireless security for the wireless network on this page. After the configuration, please click the "Apply Changes" button to save the settings.

Figure 5-66 Wireless Security Settings – 2.4GHz

The page includes the following fields:

Object	Description
Select SSID	Select the SSID you want to configure the wireless security function, which includes the root one and the client one.
Encryption	**Disable:** No security setup for wireless connection.
	■ **WEP:** It is based on the IEEE 802.11 standard. And the default setting of authentication is **Automatic**, which can select **Open System** or **Shared Key** authentication type automatically based on the wireless station's capability and request. Furthermore, you can select **Key Length** and enter 10 and 26 **Hexadecimal** digits (any combination of 0-9, a-f, A-F, zero key is not promoted) or 5 and 13 **ASCII** characters in the **Encryption Key** field.
	■ **WPA:** WPA is a medium level encryption and is supported by most wireless devices and operating systems.
	■ **WPA2:** WPA2 is a high level encryption and is supported by most wireless devices and operating systems.

	■ **WPA / WPA2 / WPA-Mixed:** WPA Mixed Mode allows the use of both WPA and WPA2 at the same time.
Authentication Mode	■ **Enterprise (RADIUS)** When you select the authentication mode based on Enterprise (Radius Server), please enter the **IP Address**, **Port**, and **Password** of the Radius Server.
	■ **Personal (Pre-Shared Key)** When you select the other authentication mode based on Personal (Pre-Shared Key), please enter at least 8 ASCII characters (Passphrase) or 64 Hexadecimal characters. All of the Cipher Suites support **TKIP** and **AES**.
802.1x Authentication	Enable 802.1x authentication function and then enter the **IP Address**, **Port**, and **Password** of the Radius Server.

5.4.5 Access Control

Choose menu "**WLAN2 (2.4GHz) → Access Control**" to allow or deny the computer of specified MAC address to connect with the WMC303-1200 on this page. After the configuration, please click the "Apply Changes" button to save the settings.

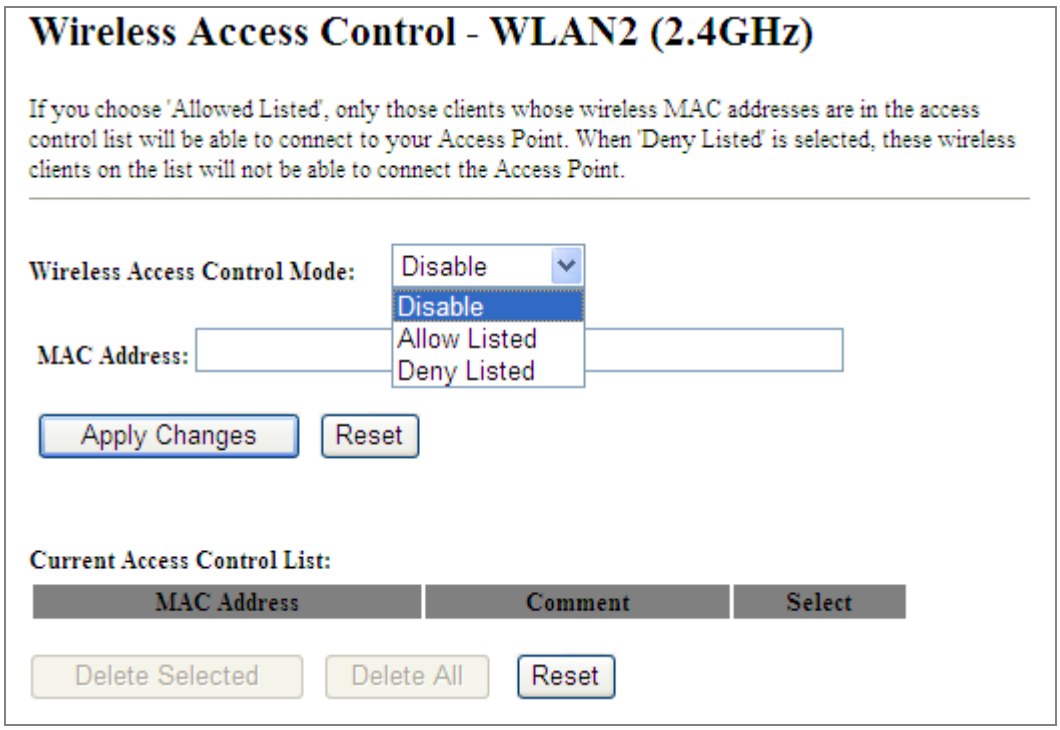

Wireless Access Control - WLAN2 (2.4GHz)
If you choose 'Allowed Listed', only those clients whose wireless MAC addresses are in the access control list will be able to connect to your Access Point. When 'Deny Listed' is selected, these wireless clients on the list will not be able to connect the Access Point.
Wireless Access Control Mode:
Disable
Disable
Allow Listed
Deny Listed
MAC Address:
Apply Changes
Reset
Current Access Control List:
MAC Address
Comment
Select
Delete Selected
Delete All
Reset

Figure 5-67 Wireless Access Control – 2.4GHz

The page includes the following fields:

Object	Description
Wireless Access Control Mode	You can choose to set the Allowed-List, Denied-List, or disable this function.
MAC Address	Enter the MAC address you want to allow or deny connection to the WMC300-1200 in the field.
Comment	You can make some comment on each MAC address on the list.
Current Access Control List	You can select some MAC addresses and click the "Delete Selected" button to delete it.

■ **Wireless Access Control example:**

To deny a PC at the MAC address of 9c:F6:1A:00:3c:01 to connect to your wireless network, do as follows:

Step 1. Select "**Deny**" from MAC Address Filter drop-down menu.

Step 2. Enter 9c:F6:1A:00:3c:01 in the MAC address box and click "**Add**".

Step 3. Click the "**OK**" button to save your settings and you can add more MAC addresses, if you like, simply

repeat the above steps.

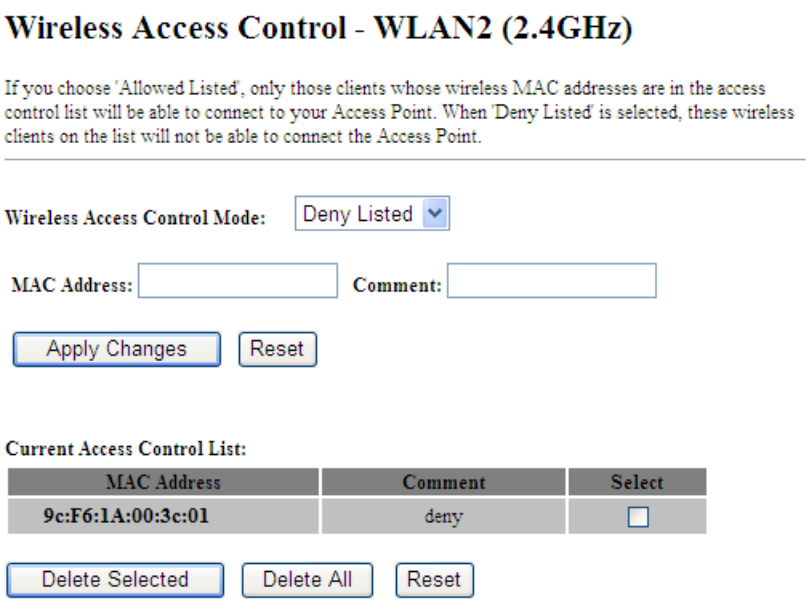
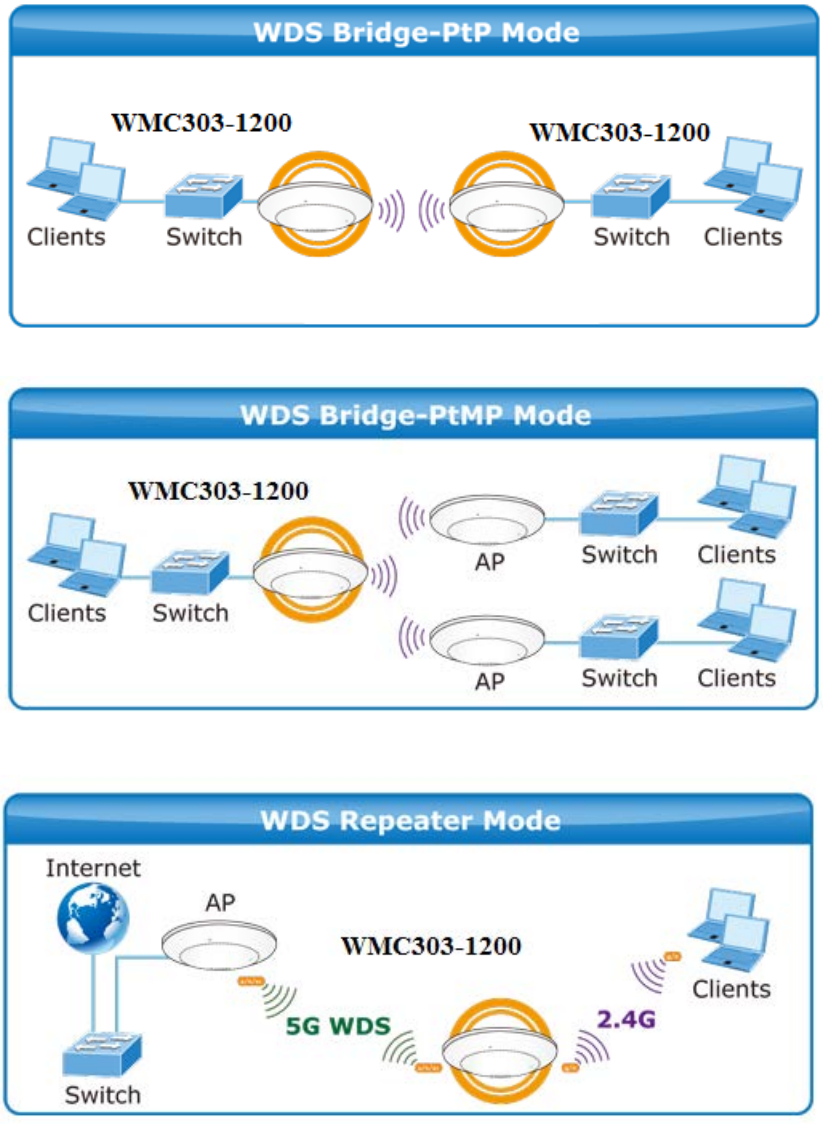

Wireless Access Control - WLAN2 (2.4GHz)
If you choose 'Allowed Listed', only those clients whose wireless MAC addresses are in the access control list will be able to connect to your Access Point. When 'Deny Listed' is selected, these wireless clients on the list will not be able to connect the Access Point.
Wireless Access Control Mode:
Deny Listed
MAC Address:
Comment:
Apply Changes
Reset
Current Access Control List:
MAC Address
Comment
Select
9c:F6:1A:00:3c:01
deny
Delete Selected
Delete All
Reset

Figure 5-68 Wireless Access Control – Deny

5.4.6 WDS

WDS (Wireless Distribution System) feature can be used to extend your existing 2.4G or 5G wireless network coverage. Here we present you how to configure such feature in 2.4GHz, which also applies to 2.4GHz.



Before configuring the WDS Setting page, you have to select the wireless mode to "**WDS**" on the **WLAN2 (2.4GHz)** -> **Basic Settings** web page.

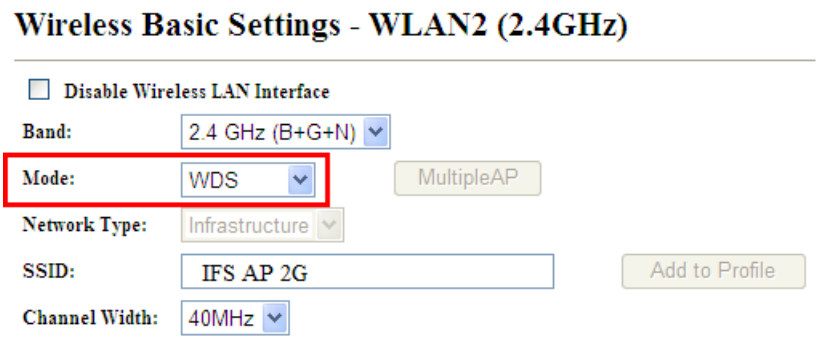


Figure 5-69 WDS Mode – 2.4GHz

Choose menu "**WLAN2 (2.4GHz) → WDS Settings**" to configure WDS to connect the WMC300-1200 with another AP on this page. After the configuration, please click the "**Apply Changes**" button to save the settings.

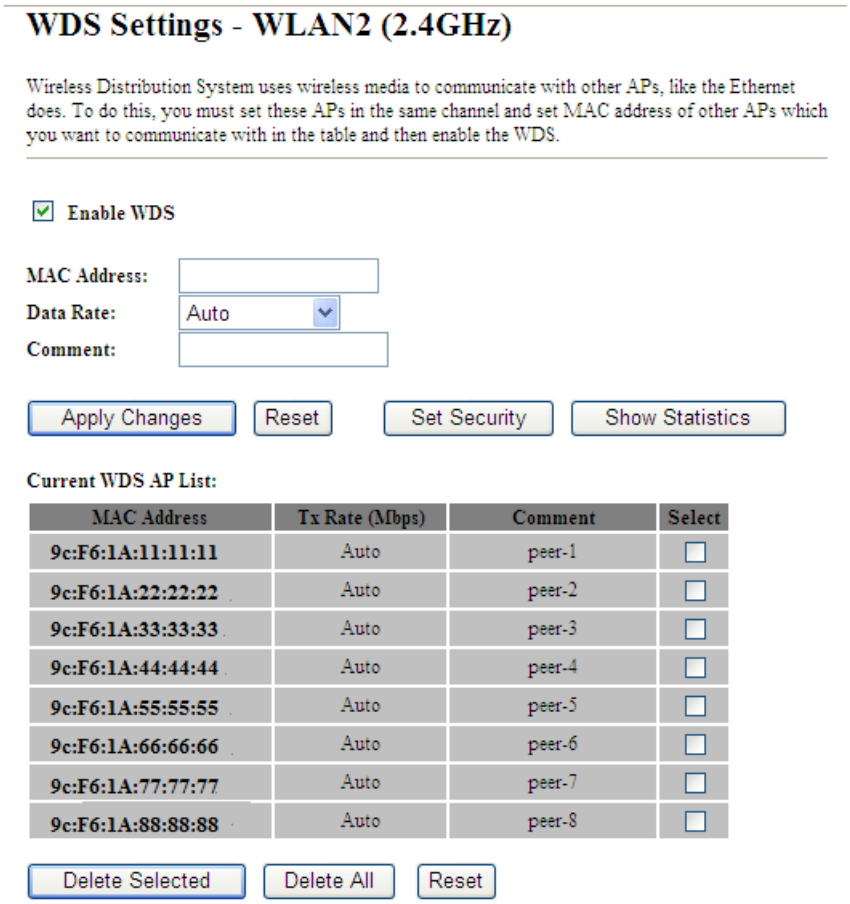


Figure 5-70 WDS Settings – 2.4GHz

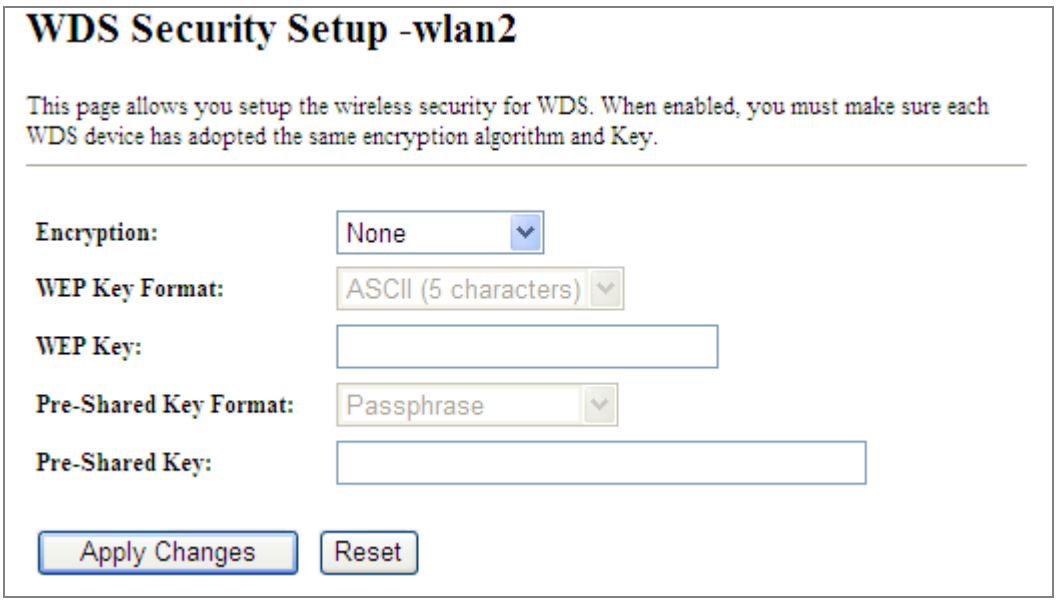

WDS Security Setup -wlan2
This page allows you setup the wireless security for WDS. When enabled, you must make sure each WDS device has adopted the same encryption algorithm and Key.
Encryption:
None
WEP Key Format:
ASCII (5 characters)
WEP Key:
Pre-Shared Key Format:
Passphrase
Pre-Shared Key:
Apply Changes
Reset

Figure 5-71 WDS – Set Security

The page includes the following fields:

Object	Description
Enable WDS	Check the box to enable the WDS function. Please select **WDS** or **AP+WDS** in the Mode of **Wireless Basic Settings** before you enable WDS on this page.
MAC Address	You can enter the MAC address of the AP you want to connect with.
Data Rate	Default is "**Auto"**.
Comment	You can make some comment for each MAC address on the list.
Set Security	Click the "**Set Security**" button to configure the wireless security parameters of the AP you want to connect via WDS.
Show Statics	Click the "Show Statics" button to show the WDS AP.
Current WDS AP List	You can select some MAC addresses of the AP and click the "Delete Selected" button to delete it.

WDS feature can only be implemented between 2 wireless devices that both support the WDS feature. Plus, **channel**, **security settings** and **security key** must be **the same** on both such devices.

To encrypt your wireless network, click "**Set Security**". For the detail of wireless security, see **section 5.5.4**. Do remember to reboot the device after you save your wireless security settings; otherwise, the WDS feature may not function.

5.4.7 Site Survey

Choose menu "**WLAN2 (2.4GHz) → Site Survey**" to scan the available local AP. If any Access Point is found, you could choose any one to connect with manually when the **Client Mode** is enabled.

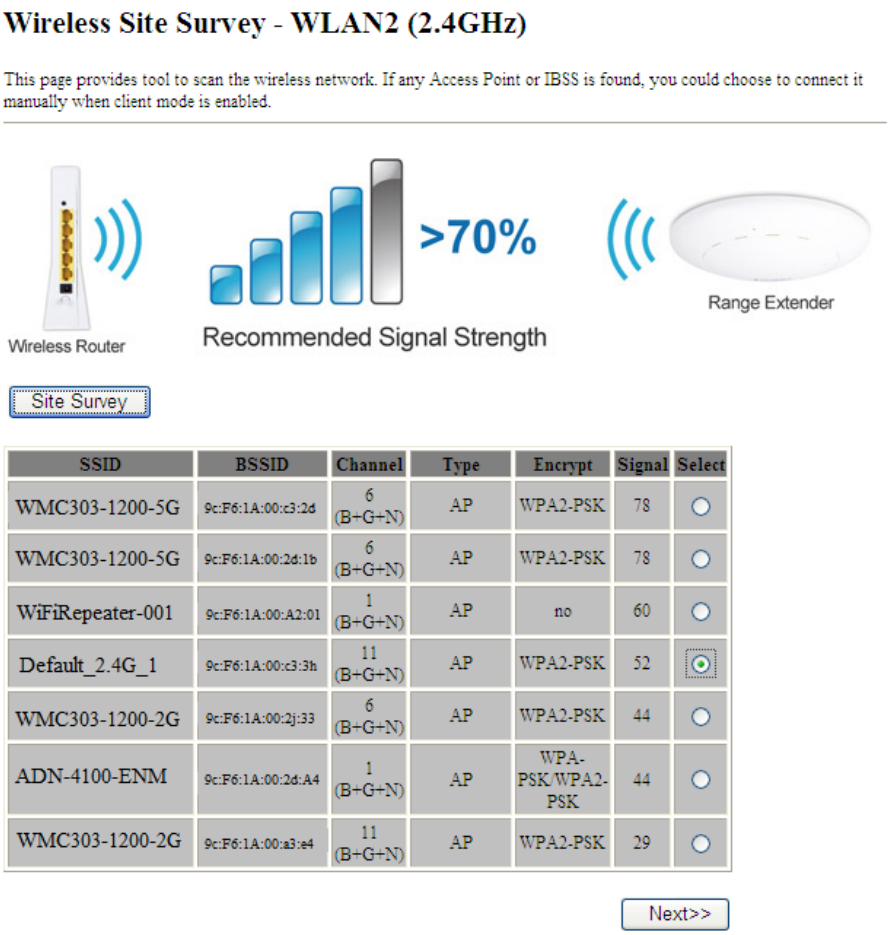

Wireless Site Survey - WLAN2 (2.4GHz)
This page provides tool to scan the wireless network. If any Access Point or IBSS is found, you could choose to connect it manually when client mode is enabled.
Wireless Router
>70%
Recommended Signal Strength
Range Extender
Site Survey
SSID BSSID Channel Type Encrypt Signal Select
WMC303-1200-5G 9c:F6:1A:00:c3:2d 6 (B+G+N) AP WPA2-PSK 78
WMC303-1200-5G 9c:F6:1A:00:2d:1b 6 (B+G+N) AP WPA2-PSK 78
WiFiRepeater-001 9c:F6:1A:00:A2:01 1 (B+G+N) AP no 60
Default_2.4G_1 9c:F6:1A:00:c3:3h 11 (B+G+N) AP WPA2-PSK 52
WMC303-1200-2G 9c:F6:1A:00:2j:33 6 (B+G+N) AP WPA2-PSK 44
ADN-4100-ENM 9c:F6:1A:00:2d:A4 1 (B+G+N) AP WPA-PSK/WPA2-PSK 44
WMC303-1200-2G 9c:F6:1A:00:a3:e4 11 (B+G+N) AP WPA2-PSK 29
Next>>

Figure 5-72 Site Survey – 2.4GHz

5.4.8 WPS

WPS (**Wi-Fi Protected Setup**) is designed to ease setup of security Wi-Fi networks and subsequently network management. This Wireless Router supports WPS features for **AP mode**, **AP+WDS mode**, **Infrastructure-Client mode**, and the wireless root interface of **Universal Repeater mode**.

Simply enter a PIN code or press the software PBC button or hardware WPS button (if any) and a secure wireless connection is established.

- **PBC:** If you find the WPS LED blinking for 2 minutes after you press the hardware WPS button on the device, it means that PBC encryption method is successfully enabled. And an authentication will be performed between your router and the WPS/PBC-enabled wireless client device during this time; if it succeeds, the wireless client device connects to your device, and the WPS LED turns off. Repeat steps mentioned above if you want to connect more wireless client devices to the device.

- **PIN**：To use this option, you must know the PIN code from the wireless client and enter it in corresponding field on your device while using the same PIN code on client side for such connection.

The page includes the following fields:

Object	Description
Disable WPS	You can check the box to disable the WPS function.
WPS Status	Here you can check if the connection via WPS is established or not.
Self-PIN Number	It is the PIN number of the WMC303-1W-1T-1200 here.
Push Button Configuration	Click the “Start PBC” to activate WPS as well in the client device within 2 minutes.
Client PIN Number	In addition to the PBC method, you can also use the PIN method to activate the WPS. Just enter the PIN number of the client device in the field and click the “Start PIN” button.

The WPS encryption can be implemented only between your Router and another WPS-capable device.

➢ Example of how to establish wireless connection using **WPS**. Please take the following steps:

Step 1. Choose menu “**WLAN2 (2.4GHz) → WPS**” to configure the setting for WPS. After the configuration, please click the “Apply Changes” button to save the settings.

Step 2. Add a new device.

If the wireless adapter supports Wi-Fi Protected Setup (WPS), you can establish a wireless connection between wireless adapter and AP using either Push Button Configuration (PBC) method or PIN method.

To build a successful connection by WPS, you should also do the corresponding configuration of the new device for WPS function.

A. By Push Button Configuration (PBC)

i. Click the “Start PBC” Button on the WPS page of the AP.

Figure 5-73 WPS-PBC – 2.4GHz-1

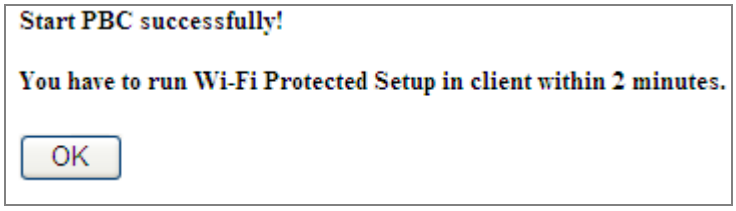


Figure 5-74 WPS-PBC – 2.4GHz-2

ii. Press and hold the WPS Button equipped on the adapter directly for 2 or 3 seconds. Or you can click the WPS button with the same function in the configuration utility of the adapter. The process must be finished within 2 minutes.

iii. Wait for a while until the next screen appears. Click **OK** to complete the WPS configuration.

B. By PIN

If the new device supports Wi-Fi Protected Setup and the PIN method, you can add it to the network by PIN with the following two methods.

Method One: Enter the PIN of your Wireless adapter into the configuration utility of the AP

i. Enter the PIN code of the wireless adapter in the field behind **Client PIN Number** in the following figure and then click **Start PIN**.

Note

The PIN code of the adapter is always displayed on the WPS configuration screen.

Figure 5-75 WPS-PIN – 2.4GHz-1

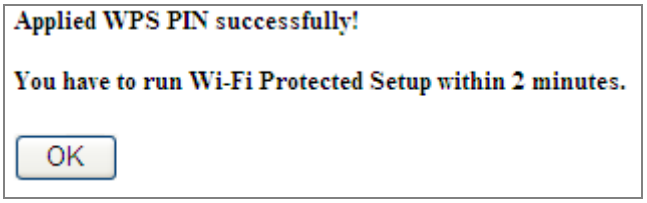


Figure 5-76 WPS-PIN – 2.4GHz-2

ii. For the configuration of the wireless adapter, please choose the option that you want to **enter PIN into the AP (Enrollee)** in the configuration utility of the WPS and click **Next** until the process finishes.

Method Two: Enter the PIN of the AP into the configuration utility of your Wireless adapter

i. Click the “Start PBC” Button on the WPS page of the AP. Get the Current PIN code of the AP in WPS page (each AP has its unique PIN code).

Figure 5-77 WPS-PIN – 2.4GHz-3

ii. For the configuration of the wireless adapter, please choose the option that you want to **enter the PIN of the AP (Registrar)** in the configuration utility of the Wireless adapter and enter it into the field. Then click **Next** until the process finishes.

5.4.9 Schedule

Wireless Schedules will enable or disable your wireless access at a set time based on your predefined schedule. This feature is often used for restricting access to all users (such as children, employees and guests) during specific times of the day for parental control or security reasons.

Choose menu "**WLAN2 (2.4GHz) → Schedule**" to configure the schedule rule of enabling wireless function. After the configuration, please click the "Apply Changes" button to save the settings.

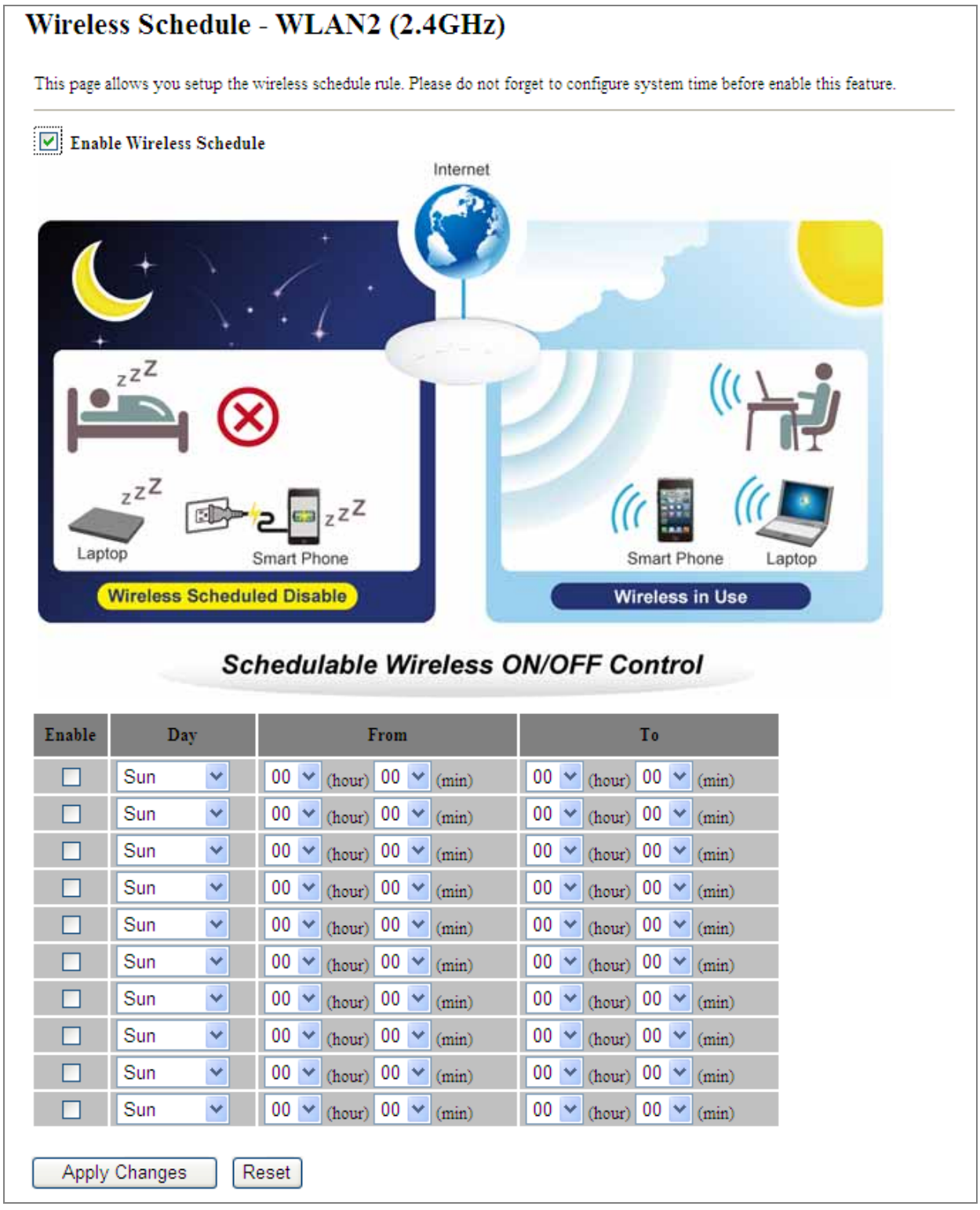


Figure 5-78 Schedule – 2.4GHz

When setting the Wireless Schedule, it is important to ensure that your **System Clock** settings have been configured. If not, your Wireless Schedule will not function correctly.

5.5 Management

This section focuses on how to maintain AP, including Restore to Factory Default Setting, Backup/Restore, Firmware Upgrade, Reboot, Password Change and Syslog.

Figure 5-79 Management – Main Menu

5.5.1 Status

You can use this function to realize the instantaneous information of the Wireless AP. The Information displayed here may vary on different configurations.

Choose menu "**Management → Status**" to show the current status and some basic settings of the WMC303-1200.

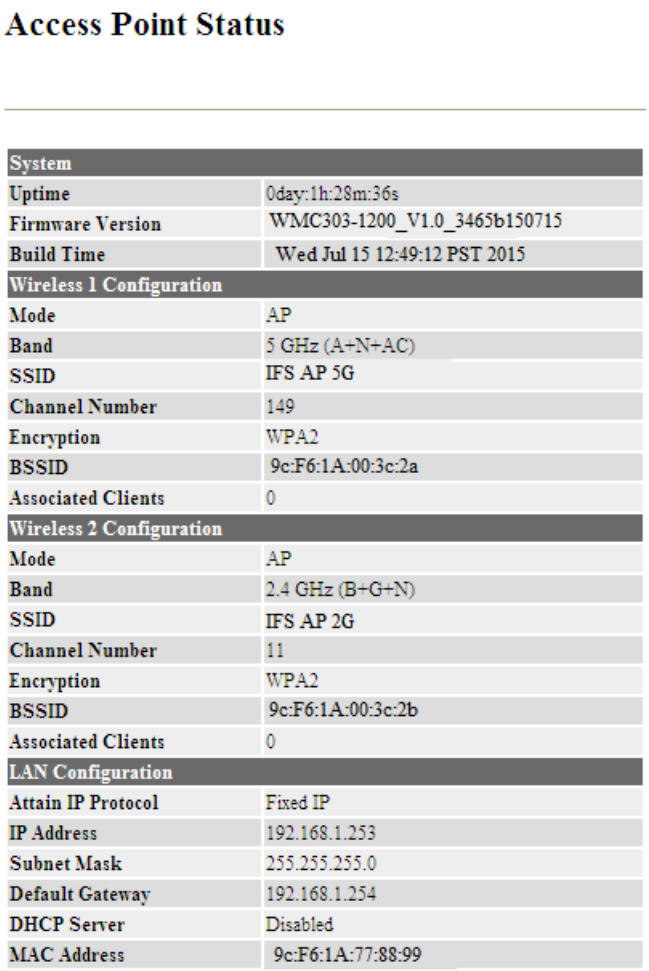


Figure 5-80 Status

5.5.2 Statistics

Choose menu "**Management → Statistics**" to show the packet counters for transmission and reception regarding wireless and Ethernet network.

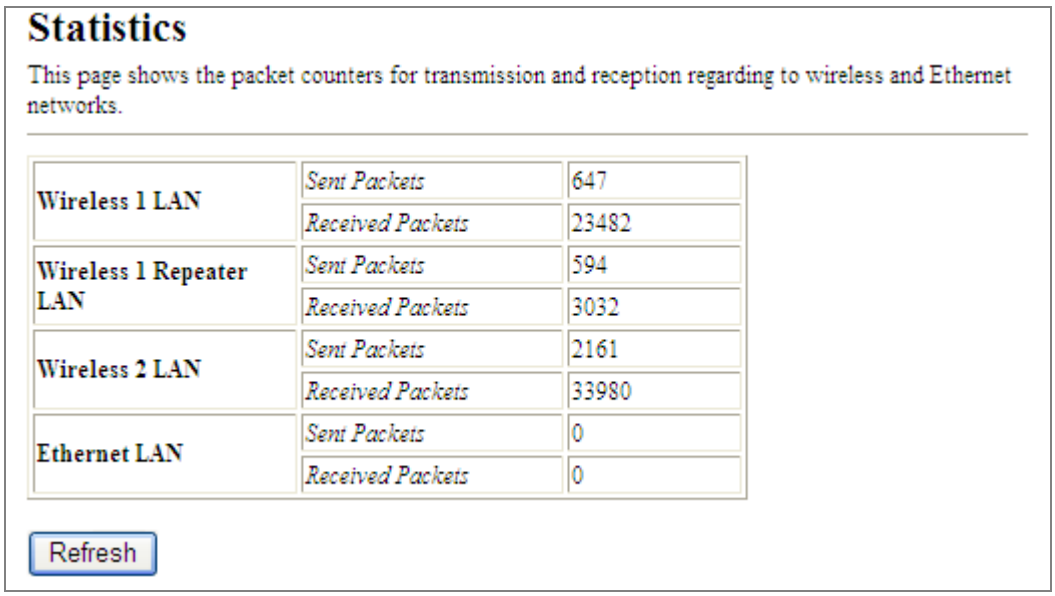


Figure 5-81 Statistics

The page includes the following fields:

Object	Description
Wireless LAN ***Sent Packets***	It shows the statistic count of sent packets on the wireless LAN interface.
Wireless LAN ***Received Packets***	It shows the statistic count of received packets on the wireless LAN interface.
Ethernet WAN ***Sent Packets***	It shows the statistic count of sent packets on the Ethernet WAN interface.
Ethernet WAN ***Received Packets***	It shows the statistic count of received packets on the Ethernet WAN interface.
Refresh	Click the refresh the statistic counters on the screen.

5.5.3 NTP Settings

This section assists you in setting the Wireless AP's system time. You can either select to set the time and date manually or automatically obtain the GMT time from Internet.

Choose menu "**Management → NTP Settings**" to configure the system time. You can also maintain the system time by synchronizing with a public time server over the Internet. After the configuration, please click the "**OK**" button to save the settings.

The configured time and date settings are lost when the Wireless AP is powered off.

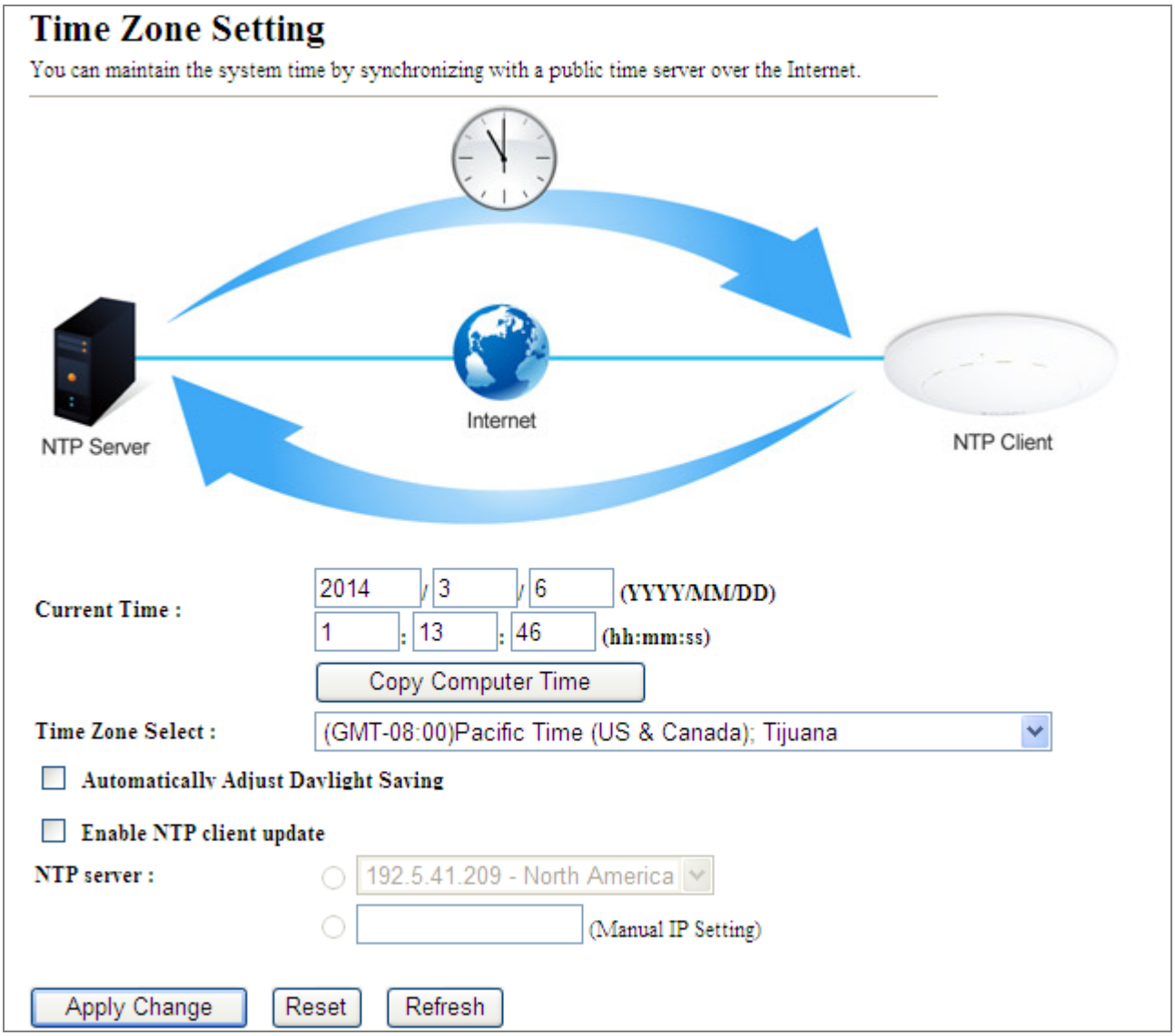


Figure 5-82 Time Zone Settings

The page includes the following fields:

Object	Description
Current Time	Input current time manually. You can click "**Copy Computer Time**" button to copy the PC's current time to the AP.
Time Zone Select	Select the time zone of the country you are currently in. The router will set its time based on your selection.
Automatically Adjust Daylight Saving	Select the time offset, if your location observes daylight saving time.
Enable NTP client update	Check to enable NTP update. Once this function is enabled, AP will automatically update current time from NTP server.
NTP Server	User may select prefer NTP sever or input address of NTP server manually.

Note

If the AP loses power for any reason, it cannot keep its clock running, and will not have the correct time when it is started again. To maintain correct time for schedules and logs, either you must enter the correct time after you restart the AP, or you must enable the NTP Server option.

5.5.4 Schedule Reboot

This page allows you to enable and configure system reboot schedule. The device can regularly reboot according to the reserved time when connecting to the Internet.

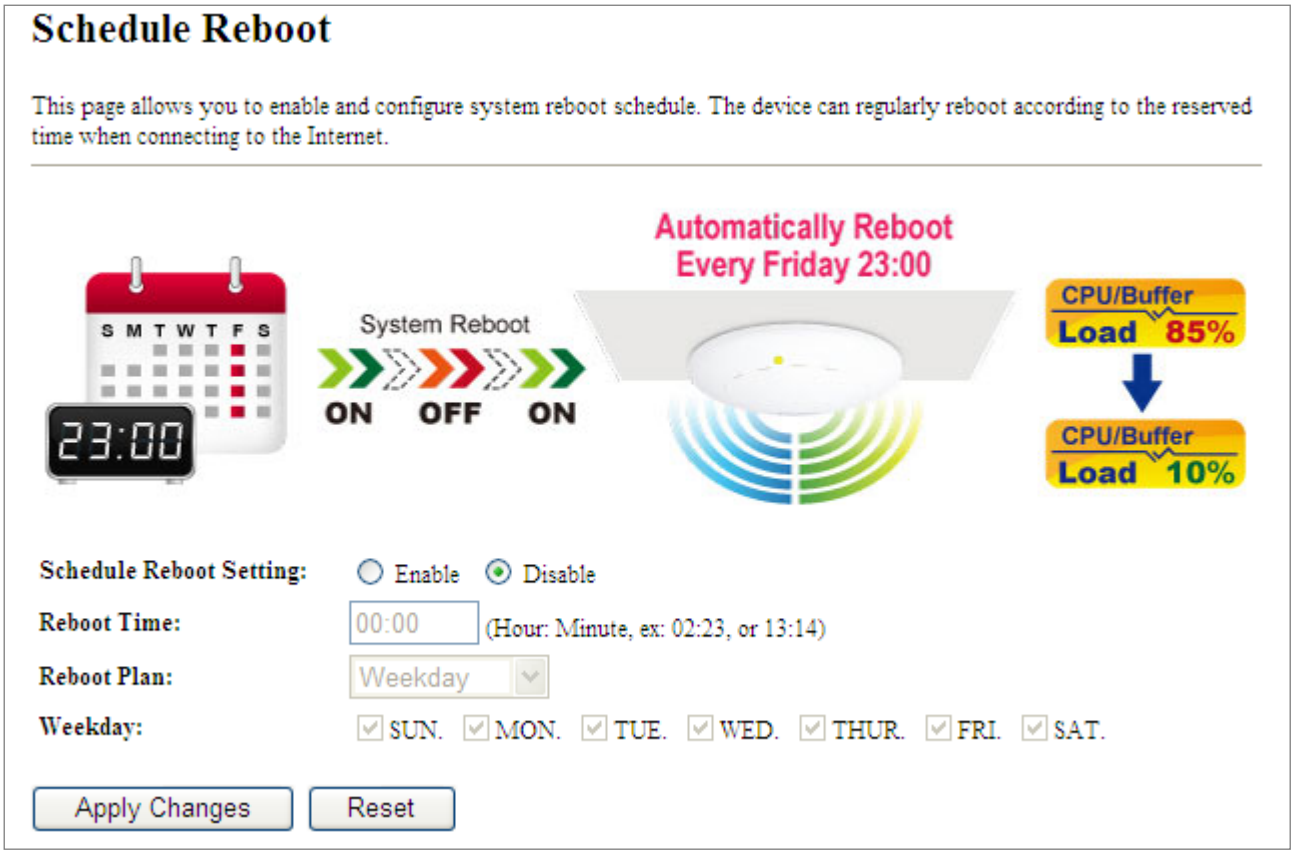

Schedule Reboot
This page allows you to enable and configure system reboot schedule. The device can regularly reboot according to the reserved time when connecting to the Internet.
Automatically Reboot
Every Friday 23:00
S M T W T F S
23:00
System Reboot
ON OFF ON
CPU/Buffer
Load 85%
CPU/Buffer
Load 10%
Schedule Reboot Setting: Enable Disable
Reboot Time: 00:00 (Hour: Minute, ex: 02:23, or 13:14)
Reboot Plan: Weekday
Weekday: SUN. MON. TUE. WED. THUR. FRI. SAT.
Apply Changes
Reset

Figure 5-83 Schedule Reboot

The page includes the following fields:

Object	Description
Schedule Reboot Setting	Enable or disable the Schedule Reboot function.
Reboot Time	Enter the Reboot Time (24-hour format) to enable this function to take effect.
Reboot Plan	There are two Reboot Plans supported in the AP: **Weekday:** select this option to let the device reboot automatically according to the reserved time in one or more days of a week. **Every day:** select this option to let the device reboot automatically according to the reserved time every day.

Weekday	Check one or more days to let the device auto reboot on schedule. When choosing “Every day” as your reboot plan, the “Weekday” will be grayed out (disabled), which means Every day will auto reboot at the time that you scheduled.

Note

1. This setting will only take effect when the Internet connection is accessible and the GMT time is configured correctly.
2. You must select at least one day when choosing “**Weekday**” as your reboot plan.
3. When choosing “**Every day**” as your reboot plan, the “**Weekday**” will be grayed out (disabled), which means **Every day** will auto reboot at the time that you schedule.

■ Example of how to configure **Schedule Reboot**. Please take the following steps:

Before configured schedule reboots, please ensure the Internet connection is accessible and the GMT time is configured correctly according to **NTP Settings** page.

Step 1. Select the Schedule Reboot Setting checkbox.

Step 2. Enter the Reboot Time (24-hour format) to enable this function to take effect. For example, if you want this function to work at 23:00 every Sunday, choose "Weekday" in the Reboot Plan field.

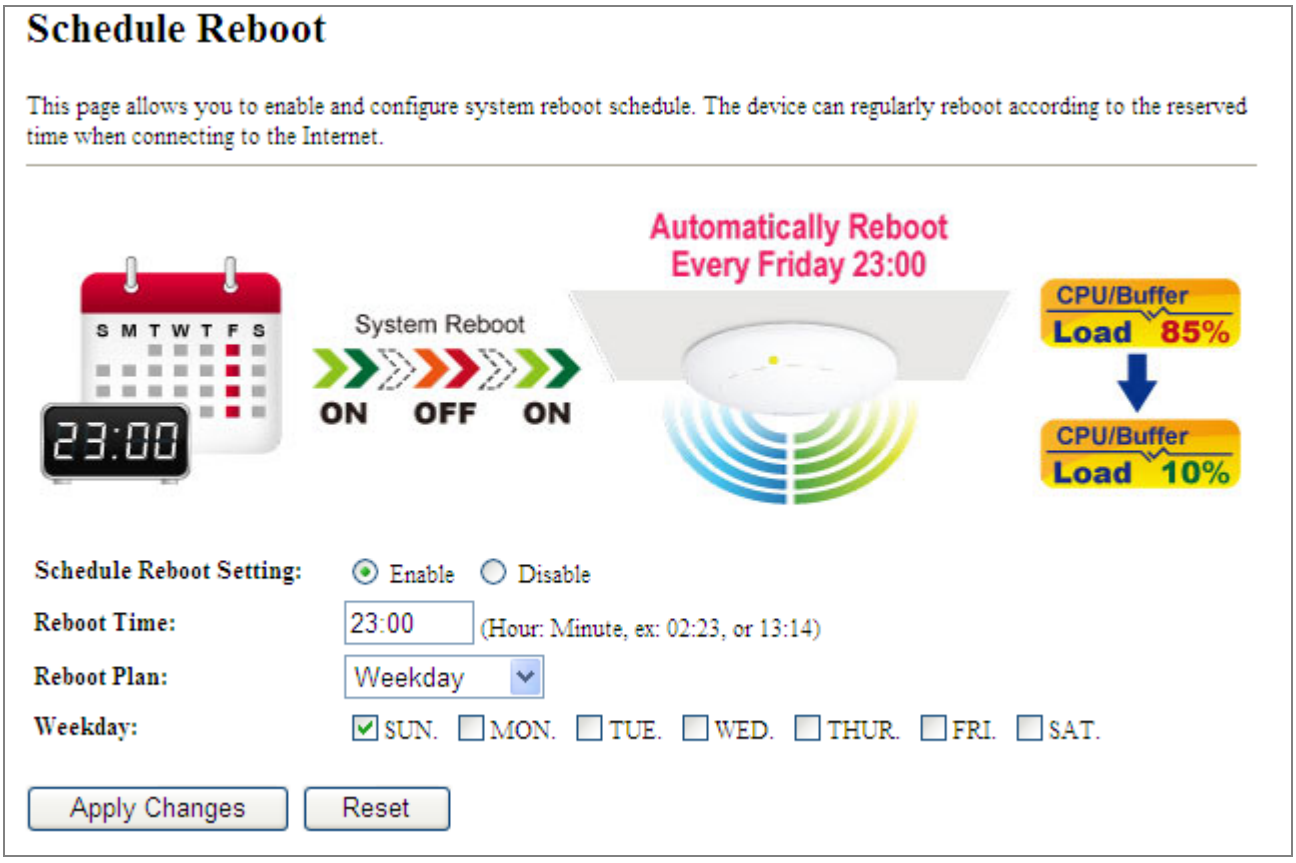

Schedule Reboot
This page allows you to enable and configure system reboot schedule. The device can regularly reboot according to the reserved time when connecting to the Internet.
Automatically Reboot
Every Friday 23:00
S M T W T F S
23:00
System Reboot
ON OFF ON
CPU/Buffer
Load 85%
CPU/Buffer
Load 10%
Schedule Reboot Setting: Enable Disable
Reboot Time: 23:00 (Hour: Minute, ex: 02:23, or 13:14)
Reboot Plan: Weekday
Weekday: SUN. MON. TUE. WED. THUR. FRI. SAT.
Apply Changes
Reset

Figure 5-84 Schedule Reboot - Example

Step 3. Click the “Apply Changes” button to take this function effect.

5.5.5 LOG

Choose menu "**Management → LOG**" to configure the settings of system log. You can check the box of the items you want to record it in the log. After the configuration, please click the "Apply" button to save the settings.

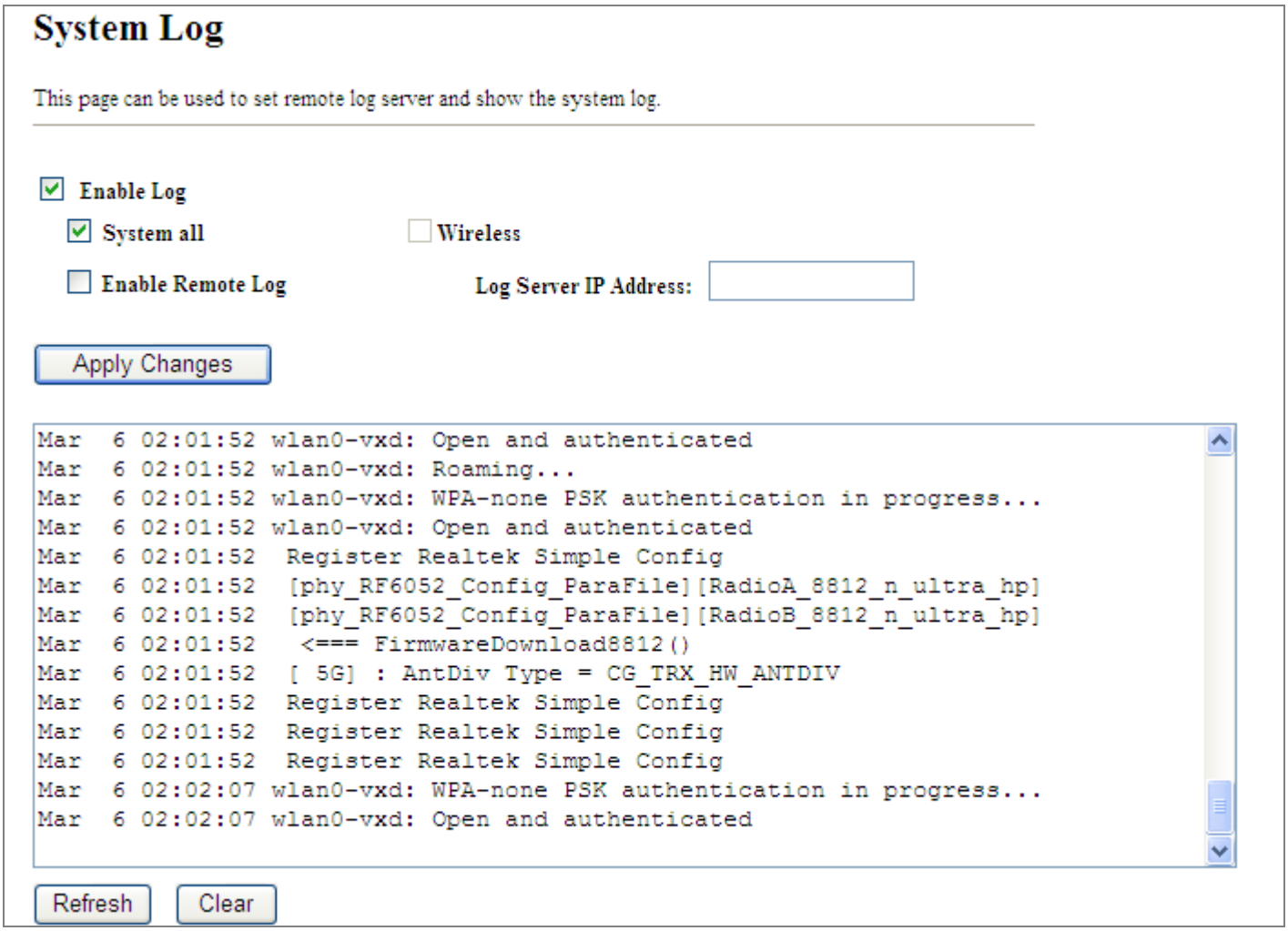

System Log
This page can be used to set remote log server and show the system log.
Enable Log
System all
Wireless
Enable Remote Log
Log Server IP Address:
Apply Changes
Mar 6 02:01:52 wlan0-vxd: Open and authenticated
Mar 6 02:01:52 wlan0-vxd: Roaming...
Mar 6 02:01:52 wlan0-vxd: WPA-none PSK authentication in progress...
Mar 6 02:01:52 wlan0-vxd: Open and authenticated
Mar 6 02:01:52 Register Realtek Simple Config
Mar 6 02:01:52 [phy_RF6052_Config_ParaFile][RadioA_8812_n_ultra_hp]
Mar 6 02:01:52 [phy_RF6052_Config_ParaFile][RadioB_8812_n_ultra_hp]
Mar 6 02:01:52 <=== FirmwareDownload8812()
Mar 6 02:01:52 [5G] : AntDiv Type = CG_TRX_HW_ANTDIV
Mar 6 02:01:52 Register Realtek Simple Config
Mar 6 02:01:52 Register Realtek Simple Config
Mar 6 02:01:52 Register Realtek Simple Config
Mar 6 02:02:07 wlan0-vxd: WPA-none PSK authentication in progress...
Mar 6 02:02:07 wlan0-vxd: Open and authenticated
Refresh
Clear

Figure 5-85 System Log

The page includes the following fields:

Object	Description
Enable Log	Check to enable log function.
System all	Check this option to display all the system logs.
Wireless	Check this option to display only the logs related to wireless module.
Enable Remote Log	Enable this option if you have a syslog server currently running on the LAN and wish to send log messages to it.
Log Server IP Address	Enter the LAN IP address of the Syslog Server.
Refresh	Click this button to update the log.
Clear	Click this button to clear the current log.

5.5.6 Upgrade Firmware

This page allows you upgrade the Access Point firmware to new version. Please note, do not power off the device during the upload because it may crash the system.

Choose menu "**Management → Upgrade Firmware**" to upgrade the firmware of the WMC303-1W-1T-1200. Select the new firmware file downloaded from the IFS website and then click "**Upload**" button to upgrade it.

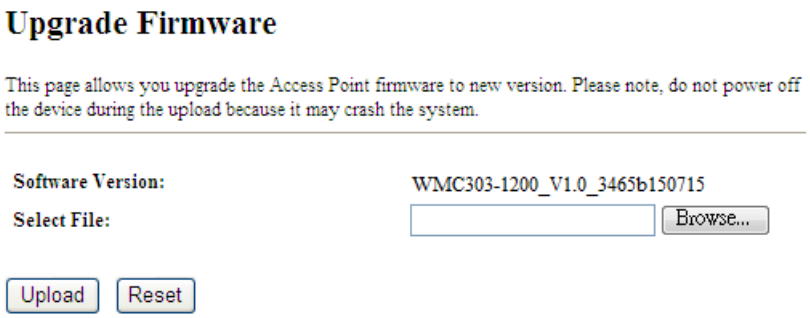

Upgrade Firmware
This page allows you upgrade the Access Point firmware to new version. Please note, do not power off the device during the upload because it may crash the system.
Software Version:
WMC303-1200_V1.0_3465b150715
Select File:
Browse...
Upload
Reset

Figure 5-86 Upgrade Firmware

The page includes the following fields:

Object	Description
Select File	Browse and select file you want to upgrade and press Upload to perform upgrade. **Please wait till the related information is shown on the screen after upgrade is finished.**

Note

Do not disconnect the Wireless AP from your management PC (the PC you use to configure the device) or power off it during the upgrade process; otherwise, it may be permanently damaged. The Wireless AP will restart automatically when the upgrade process, which takes several minutes, to complete.

5.5.7 Reload Settings

Choose menu "**Management → Reload Settings**" to back up or reset the configuration of the WMC303-1200.

Once you have configured the Wireless AP the way you want it, you can save these settings to a configuration file on your local hard drive that can later be imported to your Wireless AP in case the device is restored to factory default settings.

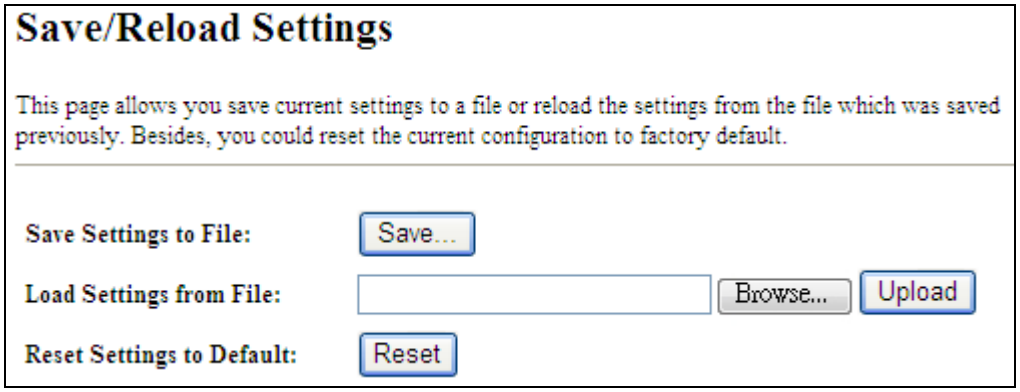

Save/Reload Settings
This page allows you save current settings to a file or reload the settings from the file which was saved previously. Besides, you could reset the current configuration to factory default.
Save Settings to File:
Save...
Load Settings from File:
Browse...
Upload
Reset Settings to Default:
Reset

Figure 5-87 Save/Reload Settings

The page includes the following fields:

Object	Description
Save Settings to File	Click the "**Save…**" button to back up the configuration of the WMC303-1200 and then save the "config.dat" in your computer.
Load Settings from File	Select the configuration file of the WMC303-1200 and then click the "**Upload**" button to reload the configuration back into the WMC303-1W-1T-1200.
Reset Settings to Default	Click the "**Reset**" button to reset all settings of the WMC303-1200 to factory default. **Factory Default Settings:** User Name: **admin** Password: **admin** IP Address: **192.168.0.100** Subnet Mask: **255.255.255.0** Default Gateway: **192.168.0.253** DHCP: **Disabled** 5GHz SSID: **IFS AP 5G** 2.4GHz SSID: **IFS AP 2G** Wireless Security: **None**

To activate your settings, you need to reboot the Wireless AP after you reset it.

5.5.8 Password

To ensure the Wireless AP's security, you will be asked for your password when you access the Wireless AP's Web-based Utility. The default user name and password are "admin". This page will allow you to add or modify the user name and password.

Choose menu "**Management → User Management**" to change the user name and password which is inputted to access the web UI of the WMC303-1200.

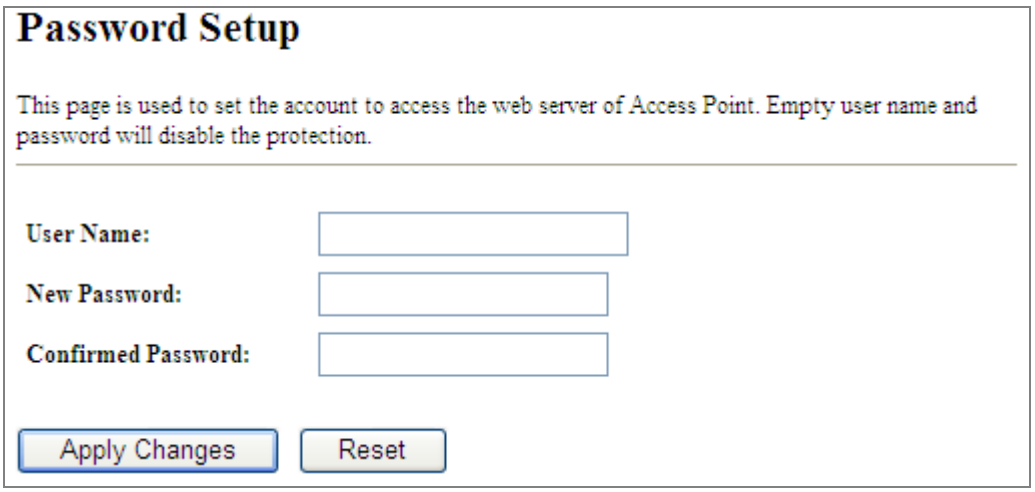

Password Setup
This page is used to set the account to access the web server of Access Point. Empty user name and password will disable the protection.
User Name:
New Password:
Confirmed Password:
Apply Changes
Reset

Figure 5-88 Password Setup

The page includes the following fields:

Object	Description
User Name	Enter user name.
New Password	Input password for this user.
Confirmed Password	Confirm password again.

Note

For the sake of security, it is highly recommended that you change default login password and user name.

5.5.9 LED Control

This section allows the user to determine the router packets are talking to particular host.

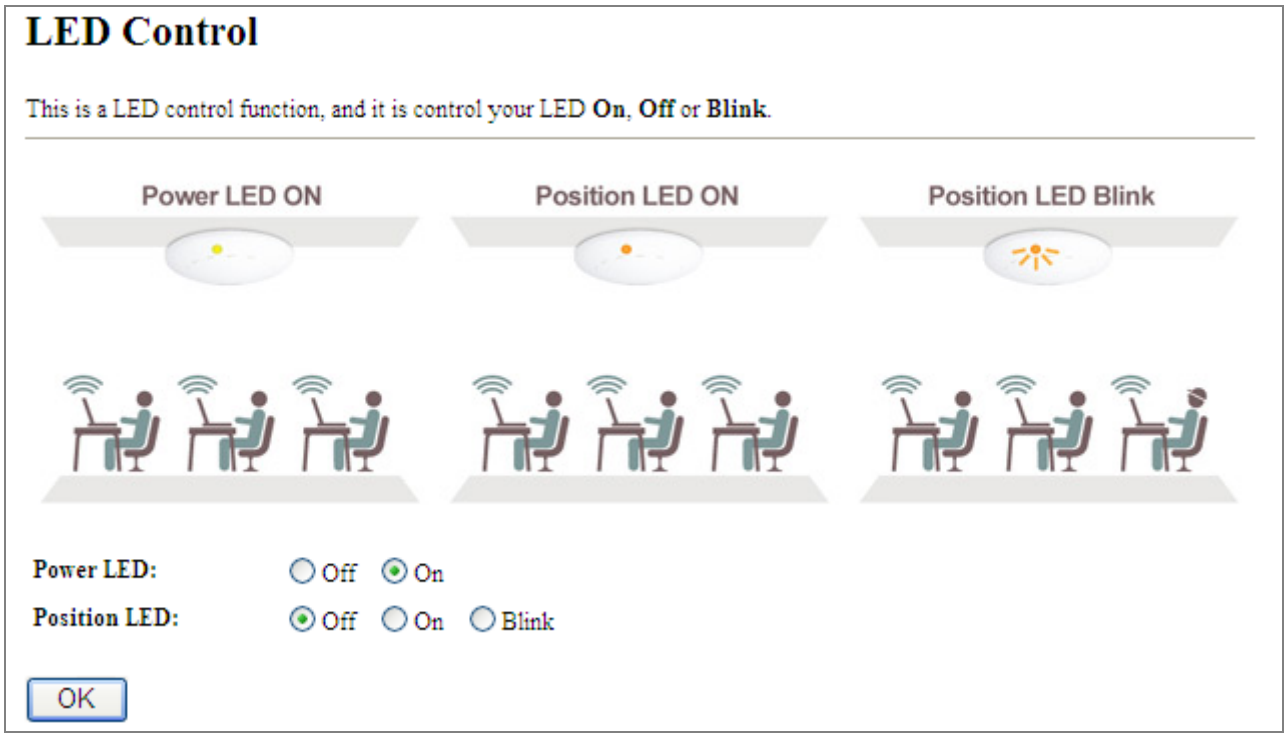

LED Control
This is a LED control function, and it is control your LED On, Off or Blink.
Power LED ON
Position LED ON
Position LED Blink
Power LED: Off On
Position LED: Off On Blink
OK

Figure 5-89 LED Control

The page includes the following fields:

Object	Description
Power LED	Click **On** or **Off** to turn on/off the Power LED.
Position LED	The LED to detect and identify the AP. 1) Position LED on: the position LED is on. 2) Position LED blink: the position LED blinks continuously. 2) Position LED off: the position LED is off.

5.5.10 Logout

To logout the WMC303-1W-1T-1200, please select "**Logout**" from the left-side menu.

Figure 5-90 Logout

Chapter 6. Quick Connection to a Wireless Network

In the following sections, the **default SSID** of the WMC303-1200 is configured to "**default**".

6.1 Windows XP (Wireless Zero Configuration)

Step 1: Right-click on the **wireless network icon** displayed in the system tray

Figure 6-1 System Tray – Wireless Network Icon

Step 2: Select [**View Available Wireless Networks**]

Step 3: Highlight and select the wireless network (SSID) to connect

(1) Select SSID [default]

(2) Click the [**Connect**] button

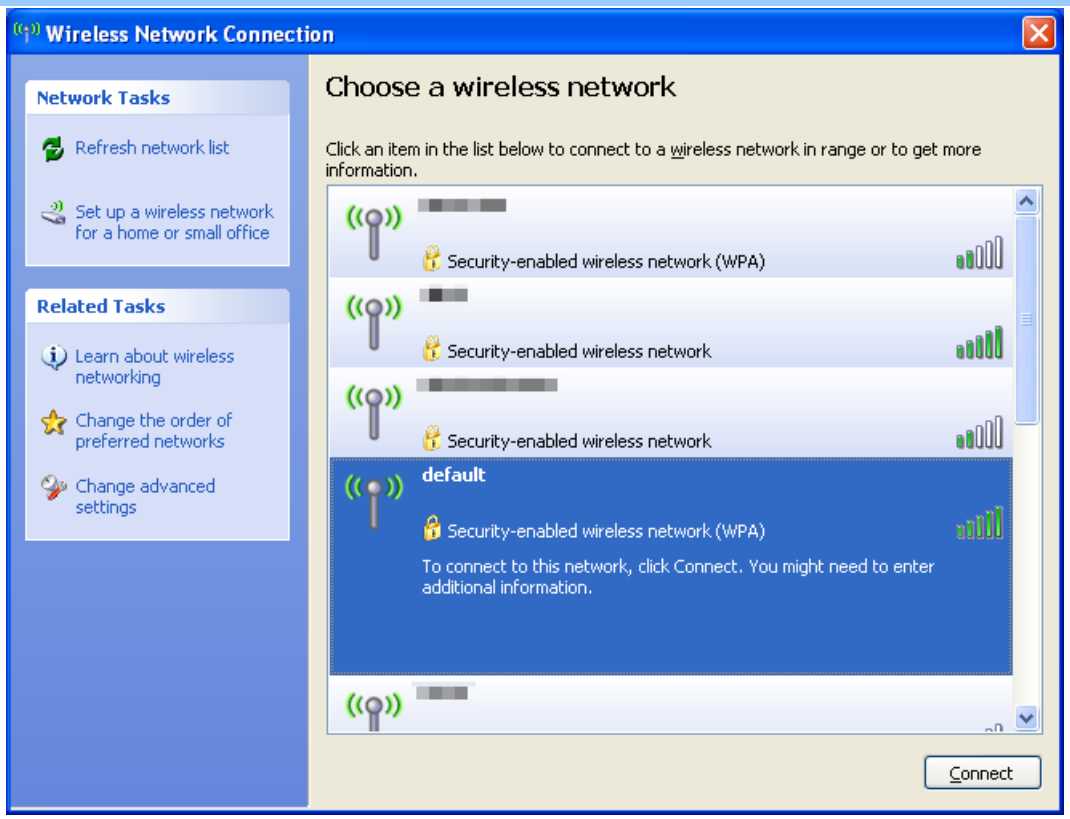

Wireless Network Connection
Network Tasks
Refresh network list
Set up a wireless network for a home or small office
Related Tasks
Learn about wireless networking
Change the order of preferred networks
Change advanced settings
Choose a wireless network
Click an item in the list below to connect to a wireless network in range or to get more information.
Security-enabled wireless network (WPA)
Security-enabled wireless network
Security-enabled wireless network
default
Security-enabled wireless network (WPA)
To connect to this network, click Connect. You might need to enter additional information.
Connect

Figure 6-2 Choose a wireless network

Step 4: Enter the **encryption key** of the Wireless AP

(1) The Wireless Network Connection box will appear

(2) Enter the encryption key that is configured in section 5.3.3

(3) Click the [Connect] button

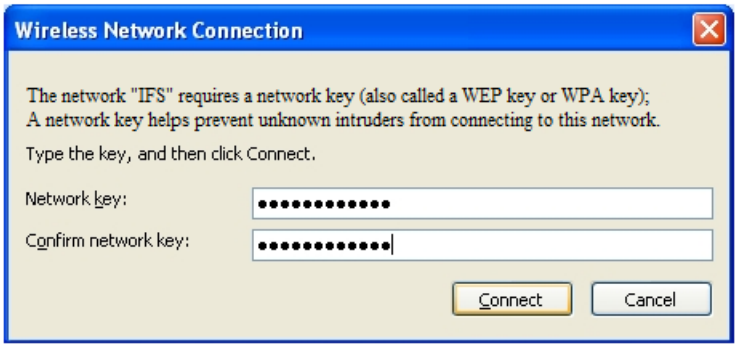

Wireless Network Connection
The network "IFS" requires a network key (also called a WEP key or WPA key).
A network key helps prevent unknown intruders from connecting to this network.
Type the key, and then click Connect.
Network key:
Confirm network key:
Connect
Cancel

Figure 6-3 Enter the network key

Step 5: Check if "**Connected**" is displayed

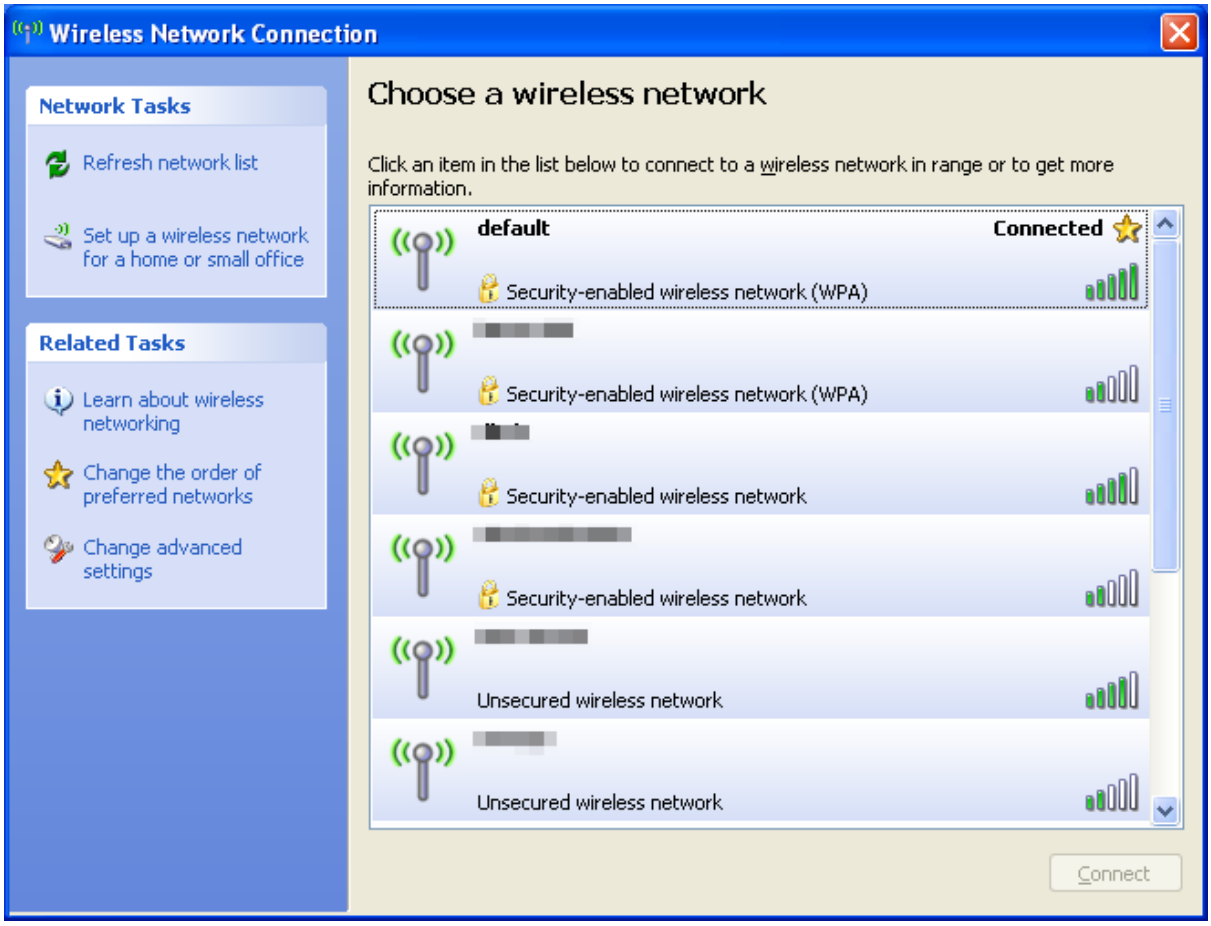

Wireless Network Connection
Network Tasks
Refresh network list
Set up a wireless network for a home or small office
Related Tasks
Learn about wireless networking
Change the order of preferred networks
Change advanced settings
Choose a wireless network
Click an item in the list below to connect to a wireless network in range or to get more information.
default
Connected
Security-enabled wireless network (WPA)
Security-enabled wireless network (WPA)
Security-enabled wireless network
Security-enabled wireless network
Unsecured wireless network
Unsecured wireless network
Connect

Figure 6-4 Choose a wireless network -- Connected

Note

Some laptops are equipped with a "Wireless ON/OFF" switch for the internal wireless LAN. Make sure the hardware wireless switch is switched to "ON" position.

6.2 Windows 7 (WLAN AutoConfig)

WLAN AutoConfig service is built-in in Windows 7 that can be used to detect and connect to wireless network. This built-in wireless network connection tool is similar to wireless zero configuration tool in Windows XP.

Step 1: Right-click on the **network icon** displayed in the system tray

Figure 6-5 Network icon

Step 2: Highlight and select the wireless network (SSID) to connect

(1) Select SSID [**default**]

(2) Click the [**Connect**] button

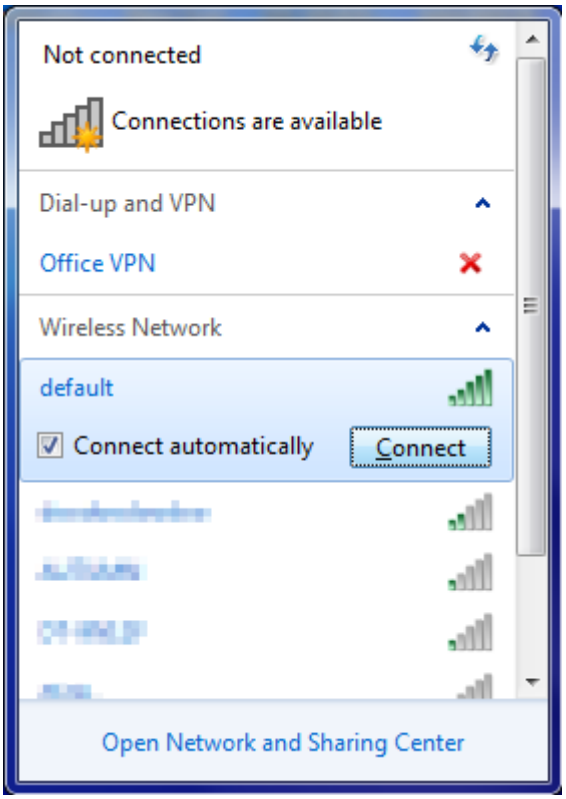


Figure 6-6 WLAN AutoConfig

Note

If you will be connecting to this Wireless AP in the future, check [**Connect automatically**].

Step 4: Enter the **encryption key** of the Wireless AP

(1) The Connect to a Network box will appear

(2) Enter the encryption key that is configured in section 5.3.3

(3) Click the [OK] button

Figure 6-7 Type the network key

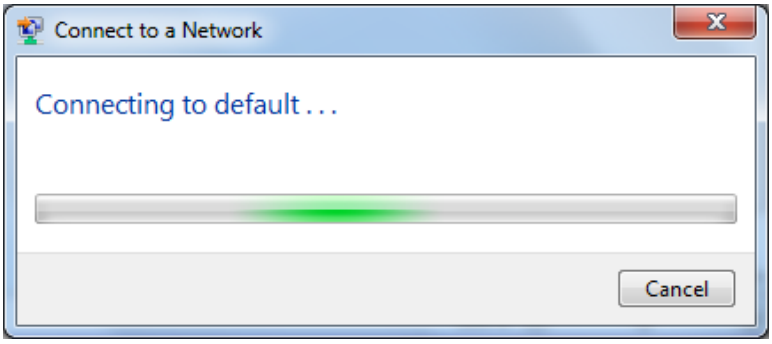


Figure 6-8 Connecting to a Network

Step 5: Check if "**Connected**" is displayed

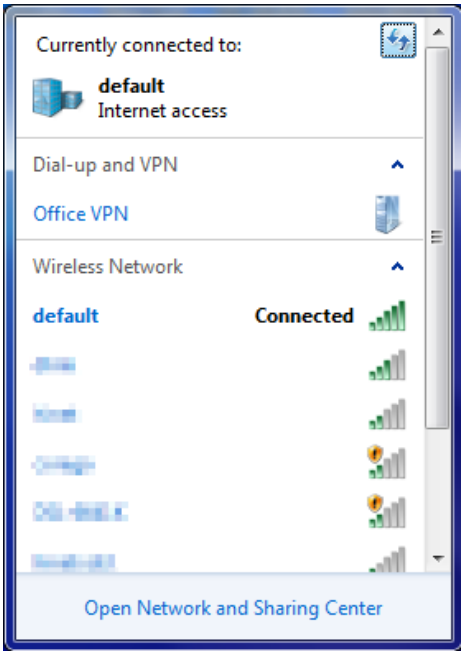


Figure 6-9 Connected to a Network

6.3 Mac OS X 10.x

In the following sections, the default SSID of the WMC303-1200 is configured to “default”.

Step 1: Right-click on the **network icon** displayed in the system tray

The AirPort Network Connection menu will appear

Figure 6-10 Mac OS – Network icon

Step 2: Highlight and select the wireless network (SSID) to connect

(1) Select and SSID [**default**]

(2) Double-click on the selected SSID

Figure 6-11 Highlight and select the wireless network

Step 4: Enter the **encryption key** of the Wireless AP

(1) Enter the encryption key that is configured in section 5.3.3

(2) Click the [OK] button

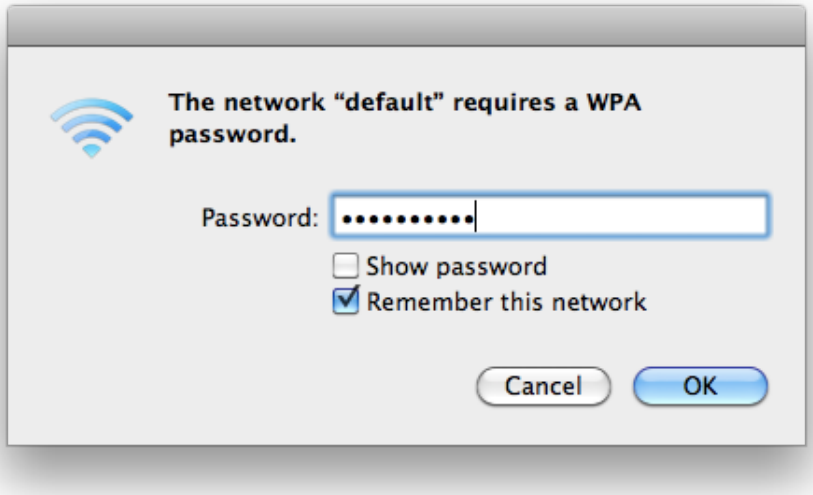


Figure 6-12 Enter the Password

Note

If you will be connecting to this Wireless AP in the future, check [**Remember this network**].

Step 5: Check if the AirPort is connected to the selected wireless network.

If "Yes", then there will be a "check" symbol in the front of the SSID.

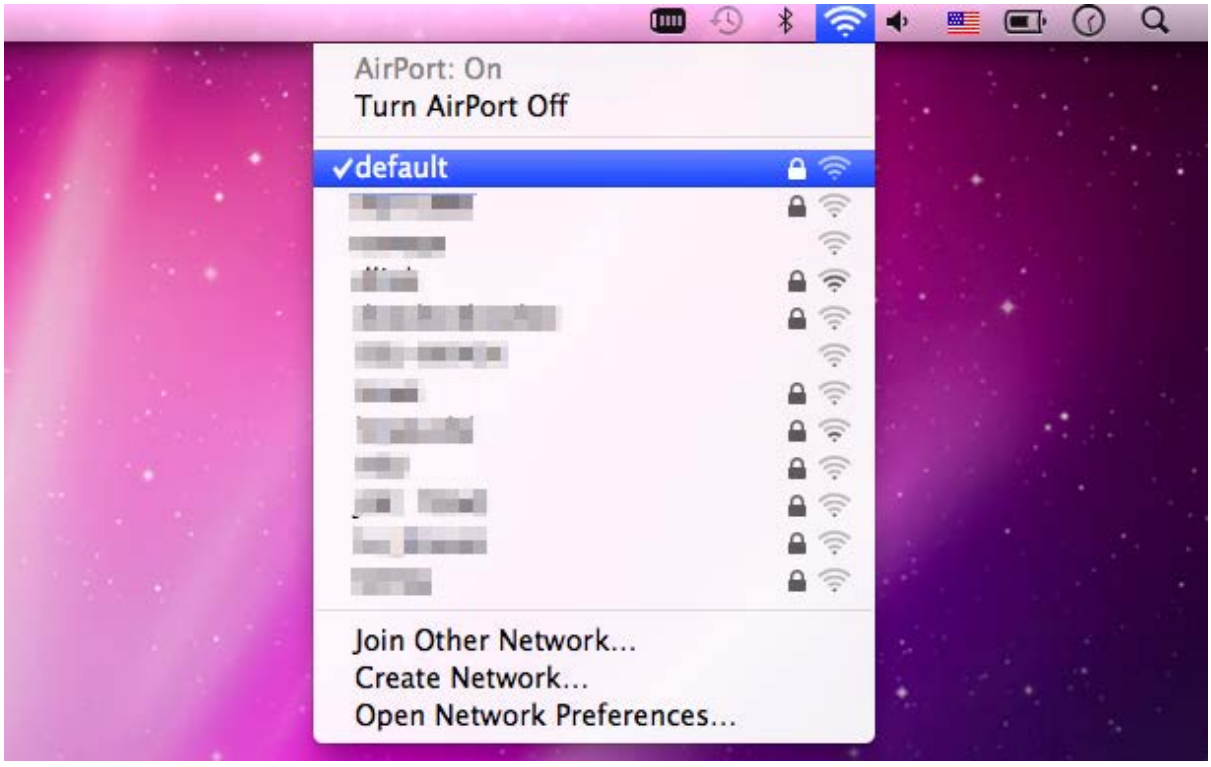


Figure 6-13 Connected to the Network

There is another way to configure the MAC OS X Wireless settings:

Step 1: Click and open the [**System Preferences**] by going to **Apple** > **System Preference** or **Applications**

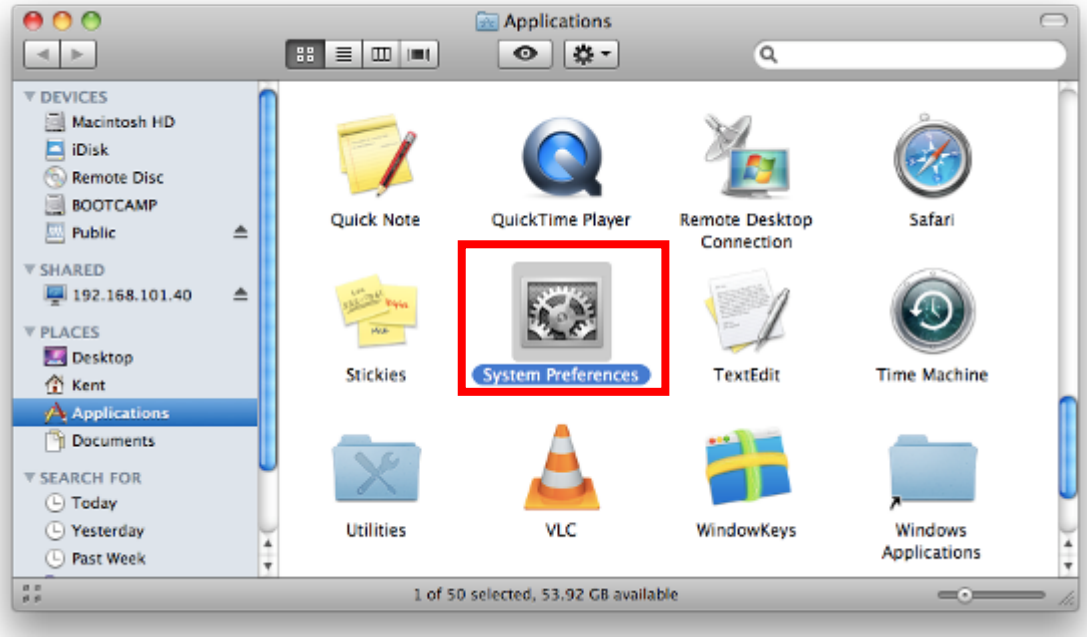


Figure 6-14 System Preferences

Step 2: Open **Network Preference** by clicking on the [**Network**] icon

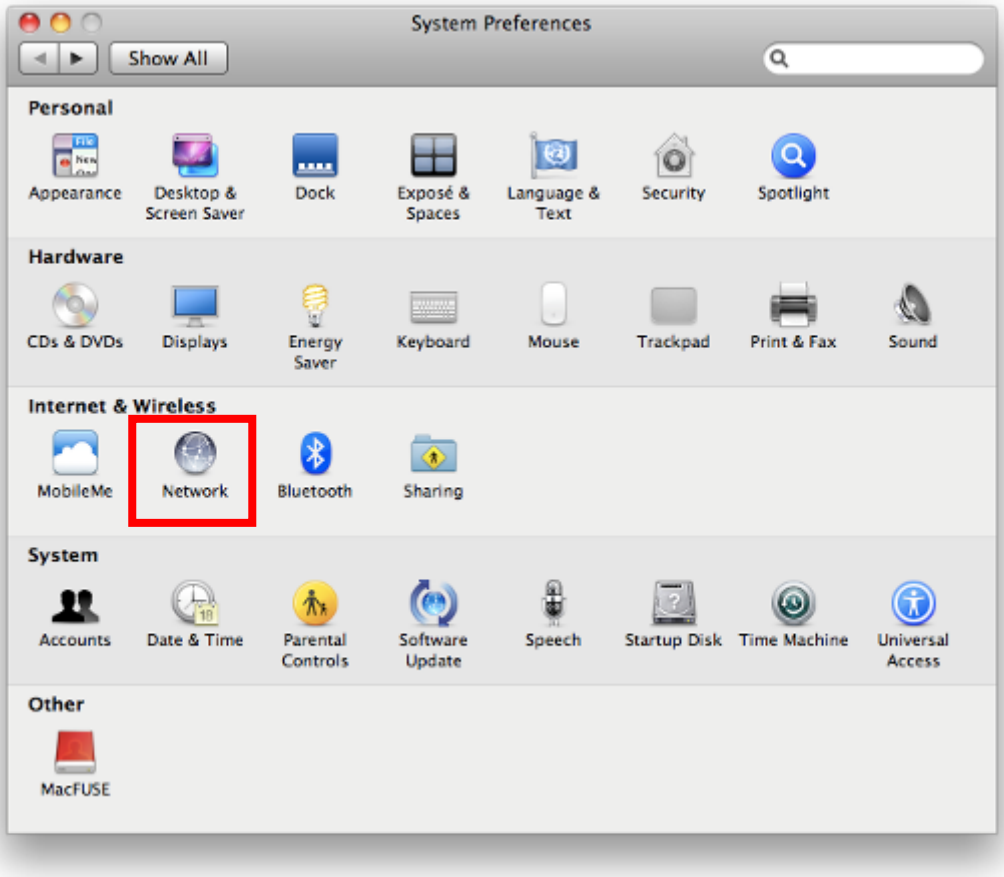


Figure 6-15 System Preferences -- Network

Step 3: Check Wi-Fi setting and select the available wireless network

(1) Choose the **AirPort** on the left-menu (make sure it is ON)

(2) Select Network Name [**default**] here

If this is the first time to connect to the Wireless AP, it should show “Not network selected”.

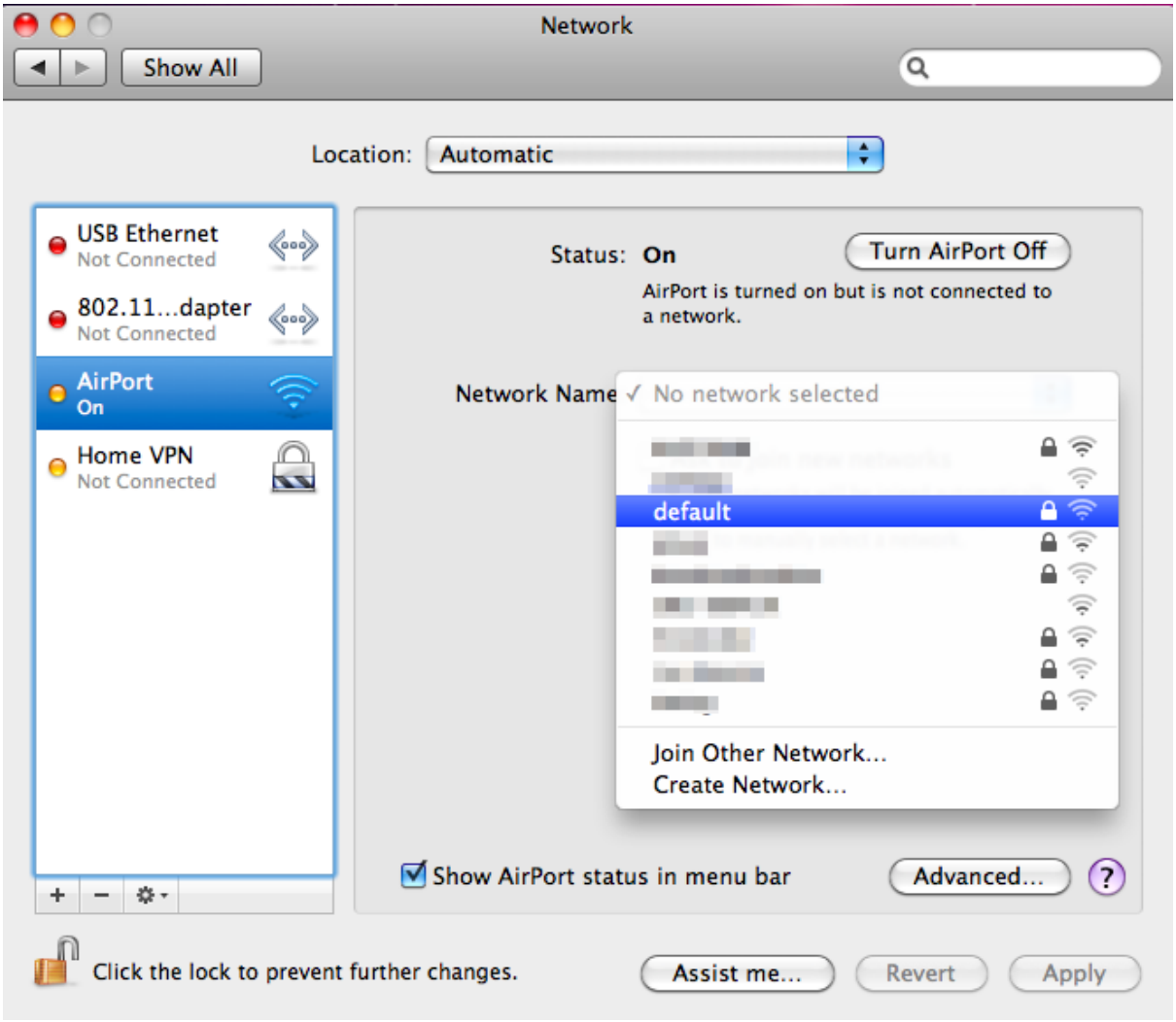


Figure 6-16 Select the Wireless Network

6.4 iPhone / iPod Touch / iPad

In the following sections, the **default SSID** of the WMC303-1200 is configured to "**default**".

Step 1: Tap the [**Settings**] icon displayed in the home screen

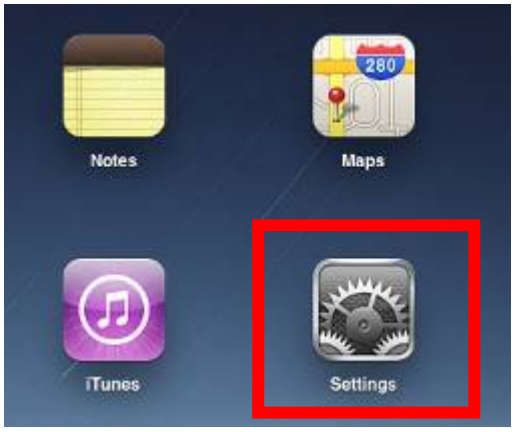


Figure 6-17 iPhone – Settings icon

Step 2: Check Wi-Fi setting and select the available wireless network

(3) Tap [**General**] \ [**Network**]

(4) Tap [**Wi-Fi**]

If this is the first time to connect to the Wireless AP, it should show "Not Connected".

Figure 6-18 Wi-Fi Setting

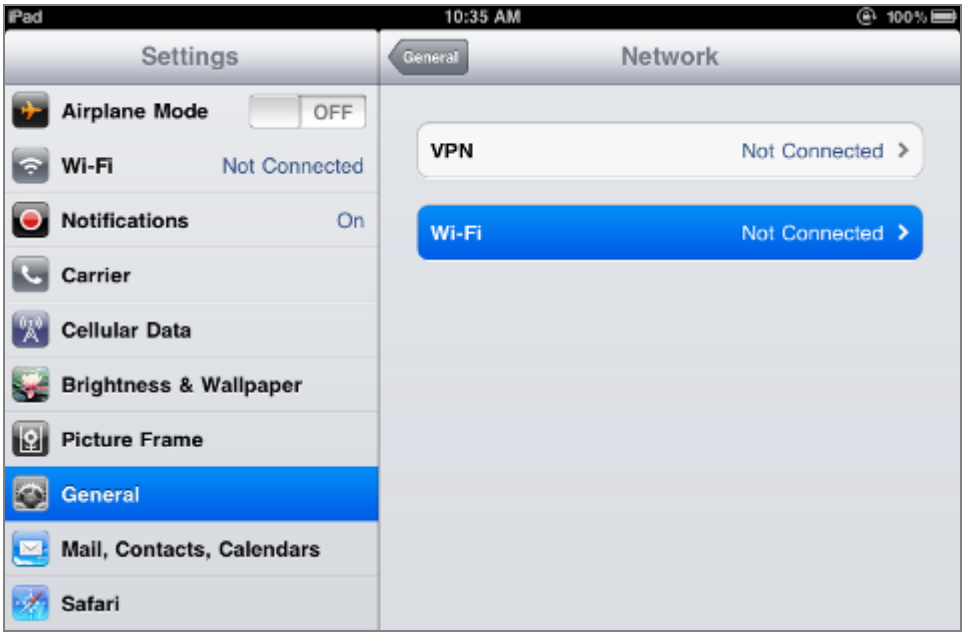


Figure 6-19 Wi-Fi Setting – Not Connected

Step 3: Tap the target wireless network (SSID) in "**Choose a Network…**"

(1) Turn on Wi-Fi by tapping "**Wi-Fi**"

(2) Select SSID [**default**]

Figure 6-20 Turn on Wi-Fi

Step 4: Enter the **encryption key** of the Wireless AP

(1) The password input screen will be displayed

(2) Enter the encryption key that is configured in section 5.3.3

(3) Tap the [**Join**] button

Figure 6-21 iPhone -- Enter the Password

Step 5: Check if the device is connected to the selected wireless network.

If “Yes”, then there will be a “check” symbol in the front of the SSID.

Figure 6-22 iPhone -- Connected to the Network

Appendix A: Troubleshooting

If you find the AP is working improperly or stop responding to you, please read this troubleshooting first before contacting the dealer for help. Some problems can be solved by yourself within a very short time.

Scenario	Solution
The AP is not responding to me when I want to access it by Web browser.	a. Please check the connection of the power cord and the Ethernet cable of this AP. All cords and cables should be correctly and firmly inserted to the AP. b. If all LED on this AP is off, please check the status of power adapter, and make sure it is correctly powered. c. You must use the same IP address section which AP uses. d. Are you using MAC or IP address filter? Try to connect the AP by another computer and see if it works; if not, please reset the AP to the factory default settings (pressing 'reset' button for over 7 seconds). e. If you did a firmware upgrade and this happens, contact your dealer of purchase for help. f. If all the solutions above don't work, contact the dealer for help.
I can't get connected to the Internet.	a. Go to 'Status' -> 'Internet Connection' menu on the router connected to the AP, and check Internet connection status. b. Please be patient, sometimes Internet is just that slow. c. If you've connected a computer to Internet directly before, try to do that again, and check if you can get connected to Internet with your computer directly attached to the device provided by your Internet service provider. d. Check PPPoE / L2TP / PPTP user ID and password entered in the router's settings again. e. Call your Internet service provider and check if there's something wrong with their service. f. If you just can't connect to one or more website, but you can still use other internet services, please check URL/Keyword filter. g. Try to reset the AP and try again later. h. Reset the device provided by your Internet service provider too. i. Try to use IP address instead of host name. If you can use IP address to communicate with a remote server, but can't use host name, please check DNS setting.

I can't locate my AP by my wireless device.	a. 'Broadcast ESSID' set to off? b. Both two antennas are properly secured. c. Are you too far from your AP? Try to get closer. d. Please remember that you have to input ESSID on your wireless client manually, if ESSID broadcast is disabled.
File downloading is very slow or breaks frequently.	a. Are you using QoS function? Try to disable it and try again. b. Internet is slow sometimes. Please be patient. c. Try to reset the AP and see if it's better after that. d. Try to know what computers do on your local network. If someone's transferring big files, other people will think Internet is really slow. e. If this never happens before, call you Internet service provider to know if there is something wrong with their network.
I can't log into the web management interface; the password is wrong.	a. Make sure you're connecting to the correct IP address of the AP! b. Password is case-sensitive. Make sure the 'Caps Lock' light is not illuminated. c. If you really forget the password, do a hard reset.
The AP becomes hot	a. This is not a malfunction, if you can keep your hand on the AP's case. b. If you smell something wrong or see the smoke coming out from AP or A/C power adapter, please disconnect the AP and power source from utility power (make sure it's safe before you're doing this!), and call your dealer of purchase for help.

Appendix B: Glossary

- **802.11ac** - 802.11ac is a wireless networking standard in the 802.11 family (which is marketed under the brand name Wi-Fi), developed in the IEEE Standards Association process, providing high-throughput wireless local area networks (WLANs) on the 5 GHz band.
- **802.11n -** 802.11n builds upon previous 802.11 standards by adding MIMO (multiple-input multiple-output). MIMO uses multiple transmitter and receiver antennas to allow for increased data throughput via spatial multiplexing and increased range by exploiting the spatial diversity, perhaps through coding schemes like Alamouti coding. The Enhanced Wireless Consortium (EWC) [3] was formed to help accelerate the IEEE 802.11n development process and promote a technology specification for interoperability of next-generation wireless local area networking (WLAN) products.
- **802.11a** - 802.11a was an amendment to the IEEE 802.11 wireless local network specifications that defined requirements for an orthogonal frequency division multiplexing (OFDM) communication system. It was originally designed to support wireless communication in the unlicensed national information infrastructure (U-NII) bands (in the 5–6 GHz frequency range) as regulated in the United States by the Code of Federal Regulations, Title 47, Section 15.407.
- **802.11b -** The 802.11b standard specifies a wireless networking at 11 Mbps using direct-sequence spread-spectrum (DSSS) technology and operating in the unlicensed radio spectrum at 2.4GHz, and WEP encryption for security. 802.11b networks are also referred to as Wi-Fi networks.
- **802.11g -** specification for wireless networking at 54 Mbps using direct-sequence spread-spectrum (DSSS) technology, using OFDM modulation and operating in the unlicensed radio spectrum at 2.4GHz, and backward compatibility with IEEE 802.11b devices, and WEP encryption for security.
- **DDNS** (**D**ynamic **D**omain **N**ame **S**ystem) **-** The capability of assigning a fixed host and domain name to a dynamic Internet IP Address.
- **DHCP** (**D**ynamic **H**ost **C**onfiguration **P**rotocol) **-** A protocol that automatically configure the TCP/IP parameters for the all the PC(s) that are connected to a DHCP server.
- **DMZ** (**De**-**mi**litarized **Z**one) **-** A Demilitarized Zone allows one local host to be exposed to the Internet for a special-purpose service such as Internet gaming or videoconferencing.
- **DNS** (**D**omain **N**ame **S**ystem) **-** An Internet Service that translates the names of websites into IP addresses.
- **Domain Name -** A descriptive name for an address or group of addresses on the Internet.
- **DSL** (**D**igital **S**ubscriber **L**ine) **-** A technology that allows data to be sent or received over existing traditional phone lines.
- **ISP** (**I**nternet **S**ervice **P**rovider) **-** A company that provides access to the Internet.

- **MTU** (**Maximum Transmission Unit**) **-** The size in bytes of the largest packet that can be transmitted.
- **NAT** (**N**etwork **A**ddress **T**ranslation) **-** NAT technology translates IP addresses of a local area network to a different IP address for the Internet.
- **PPPoE** (**P**oint to **P**oint **P**rotocol **o**ver **E**thernet) **-** PPPoE is a protocol for connecting remote hosts to the Internet over an always-on connection by simulating a dial-up connection.
- **SSID -** A **S**ervice **S**et **Id**entification is a thirty-two character (maximum) alphanumeric key identifying a wireless local area network. For the wireless devices in a network to communicate with each other, all devices must be configured with the same SSID. This is typically the configuration parameter for a wireless PC card. It corresponds to the ESSID in the wireless Access Point and to the wireless network name.
- **WEP** (**W**ired **E**quivalent **P**rivacy) **-** A data privacy mechanism based on a 64-bit or 128-bit or 152-bit shared key algorithm, as described in the IEEE 802.11 standard.
- **Wi-Fi -** A trade name for the 802.11b wireless networking standard, given by the Wireless Ethernet Compatibility Alliance (WECA, see http://www.wi-fi.net), an industry standards group promoting interoperability among 802.11b devices.
- **WLAN** (**W**ireless **L**ocal **A**rea **N**etwork) **-** A group of computers and associated devices communicate with each other wirelessly, which network serving users are limited in a local area.